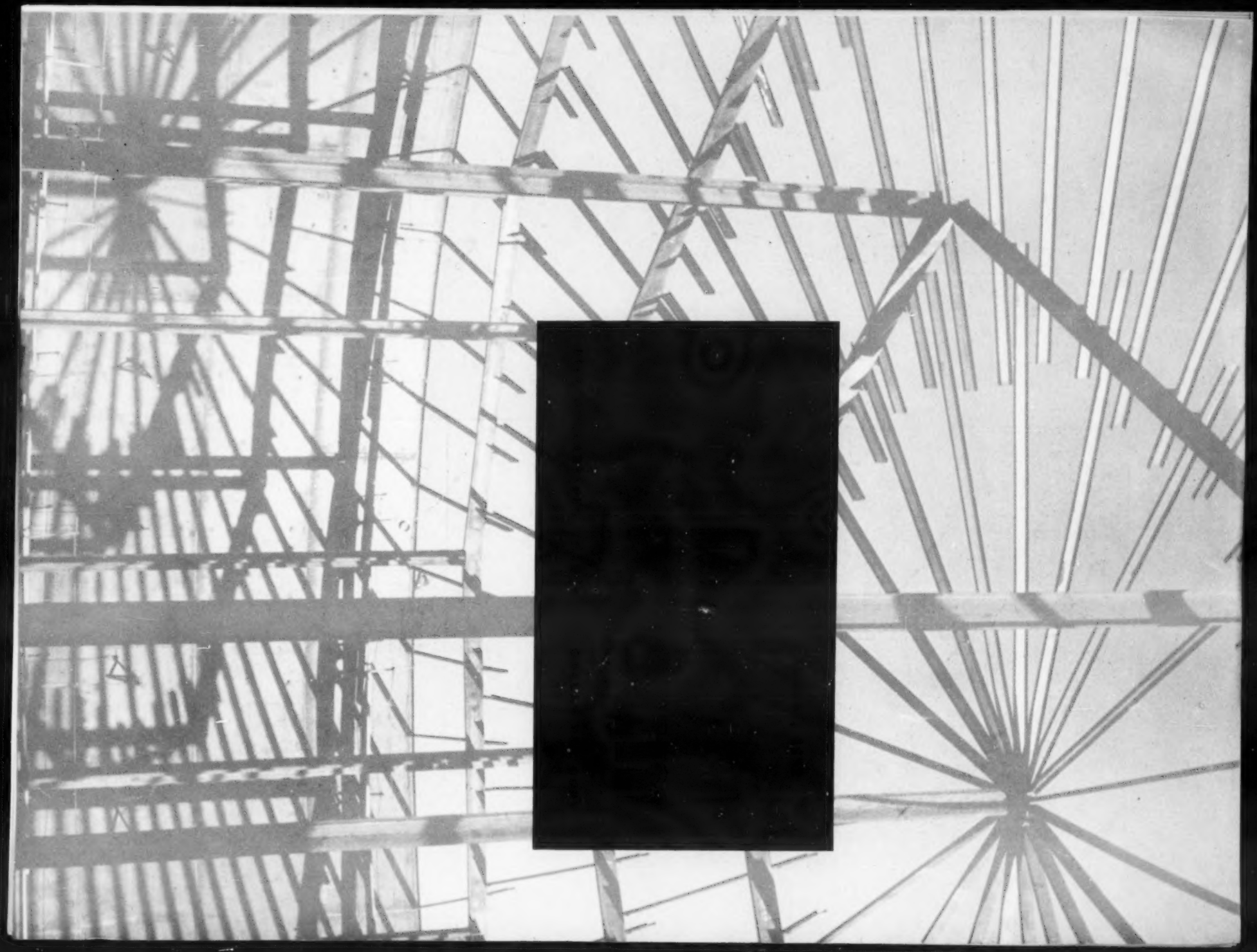

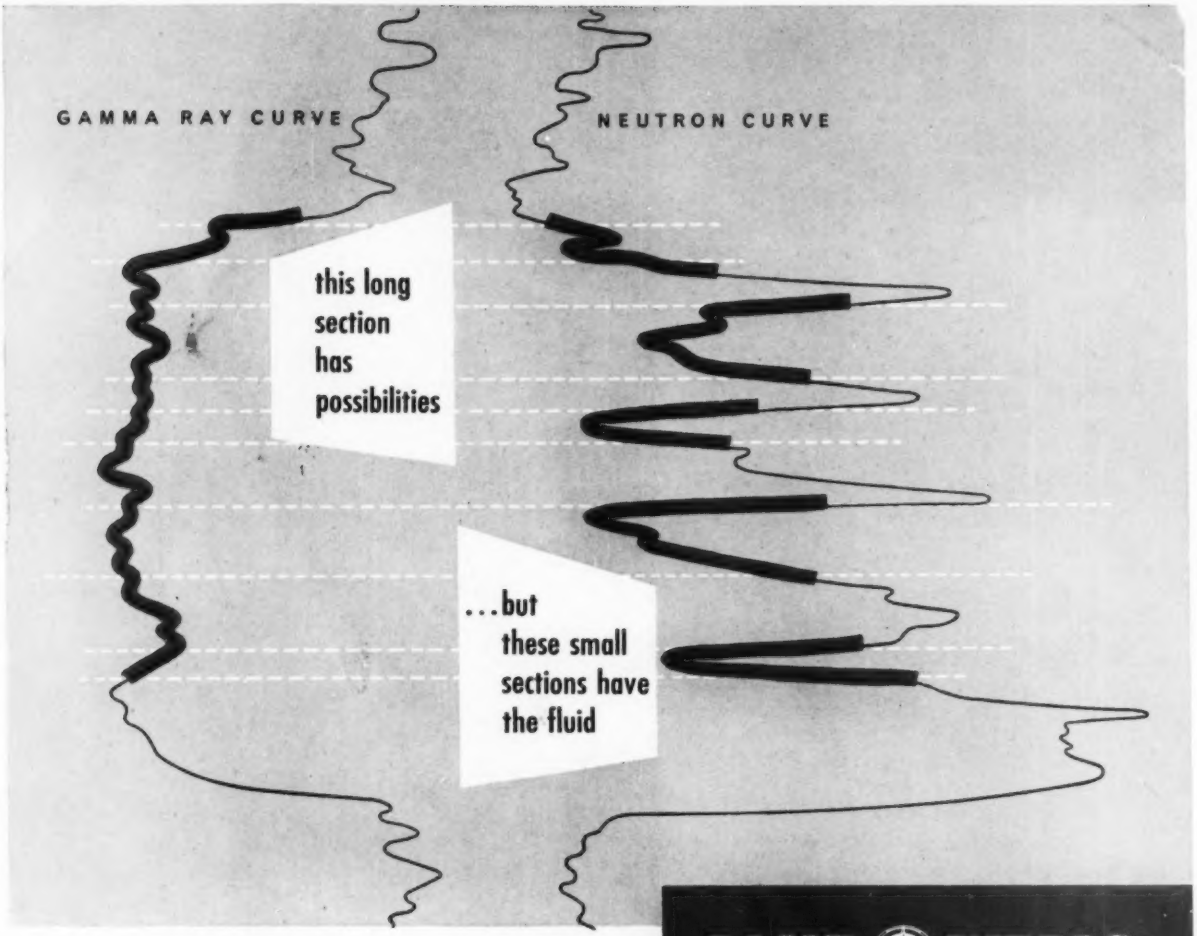

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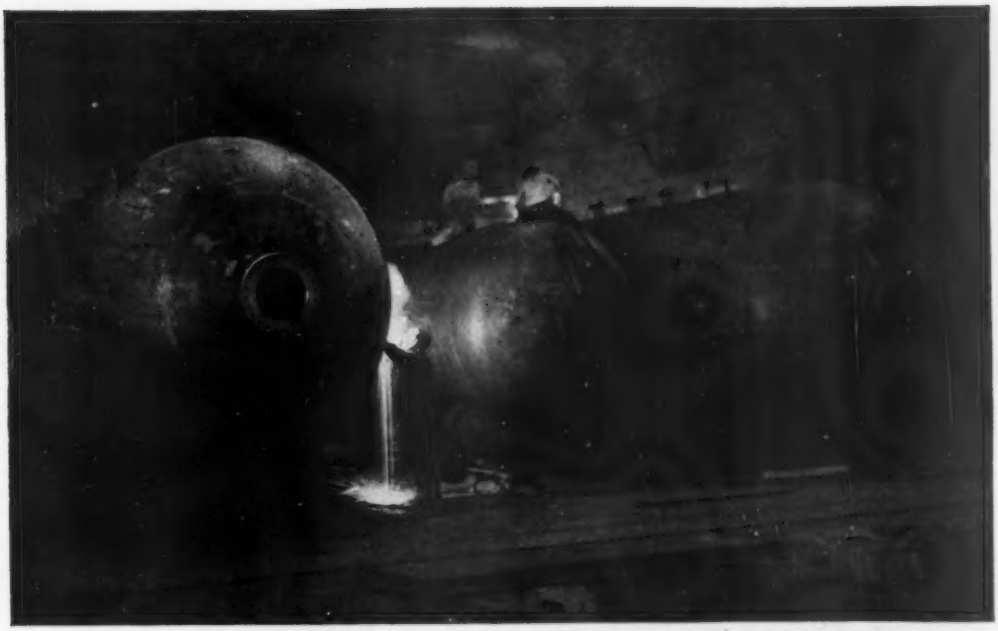
Pyrene TRADE MARK FIRE FIGHTING EQUIPMENT

Three Pyrene Foam Tenders supplied to the Esso Petroleum Company's Refinery at Fawley.

WORLD PETROLEUM for August, 1952. Vol. 23, No. 9, August, 1952. WORLD PETROLEUM is published monthly by Mona Palmer, Trustee under the will of Russell Palmer, 2 West 45th St., New York 36, N. Y. Acceptance at East Stroudsburg, Pa., under Section 34-64 P. L. & R. Authorized. Subscription rate: $5.00 per year, single copies $1.00. Copyright, 1952, by Mona Palmer, Trustee.



An excellent example of Graver's skill in fabricating pressure vessels is this 10′ x 32′ desalting tank for use in a new refinery unit now under construction. The tank was built for an operating pressure of 300 psi.

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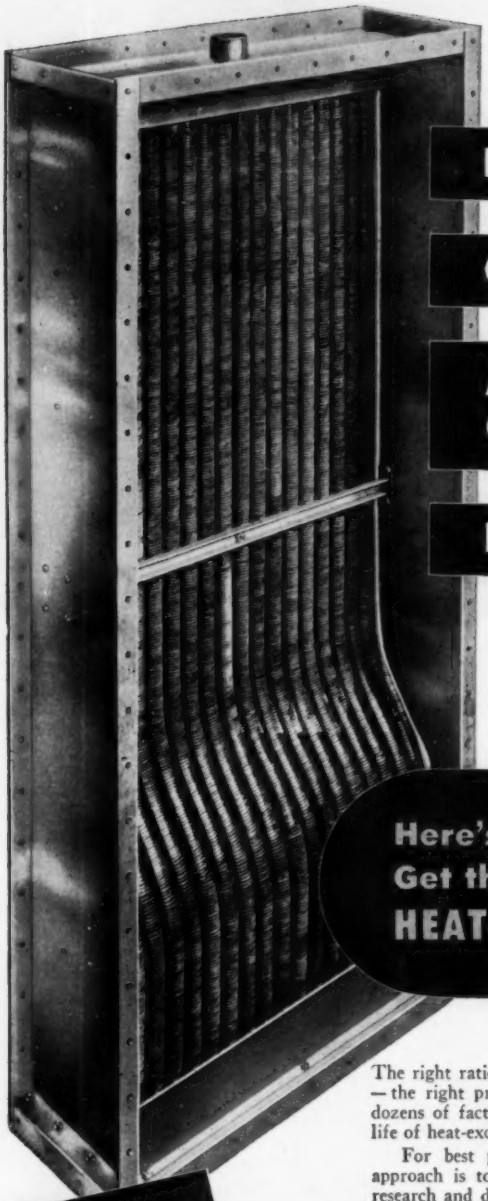

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"You may have to stand outside!"

REMEMBER Aesop's fable of the camel and his master--how the kind master allowed the shivering beast to put into the tent first his head, next his shoulders, then his forelegs!

And then the camel said, "Master, I think I ought to come wholly inside," and crowded in. Immediately he said, "There is hardly room for us both, so I think it would be better for you to stand outside so I can turn around and lie down." And without further ado, the camel kicked the man out and took the entire tent.

Men have heard this story for 2,500 years--repeatedly have seen how it illustrates what happens when one man or group of men gain power over others. Men saw it happen in Italy and Germany when Mussolini and Hitler took over. Men saw it happen in Russia.

Even here in America a similar trend is evident. Powerful influences overlook no opportunity, through political manipulation, central controls and bureaucratic regulations, to intrude more and more in our private lives. The situation demands continual, alert watchfulness by all citizens who believe in individual liberty and freedom, to prevent this camel of big government from creeping further into the tent. Before we realize it, "we, the people," the master, may find ourselves "standing outside." In America it is government, which is the servant of the people.

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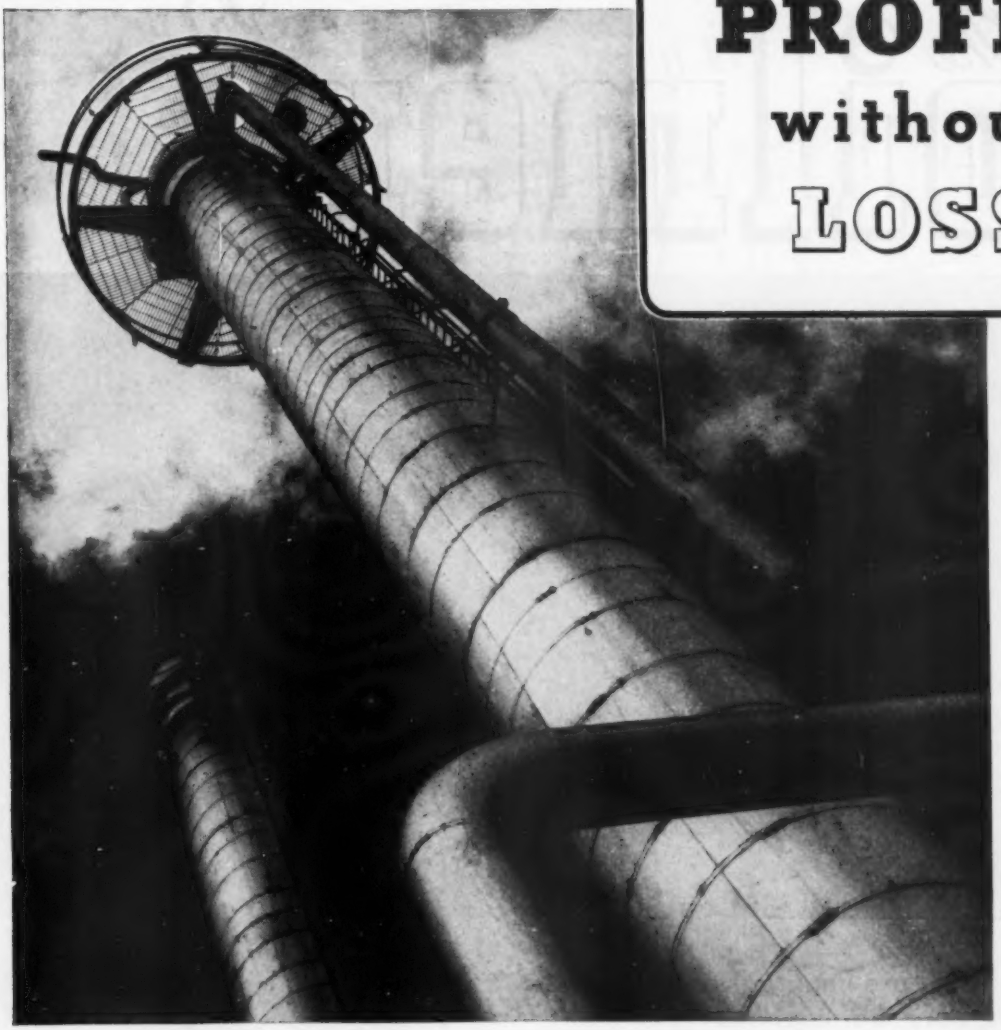

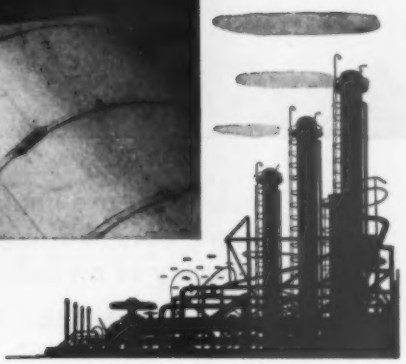

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The photograph shows Fractionating equipment on Distillation units at Shell Chemical Plant, Stanlow, Cheshire, England.

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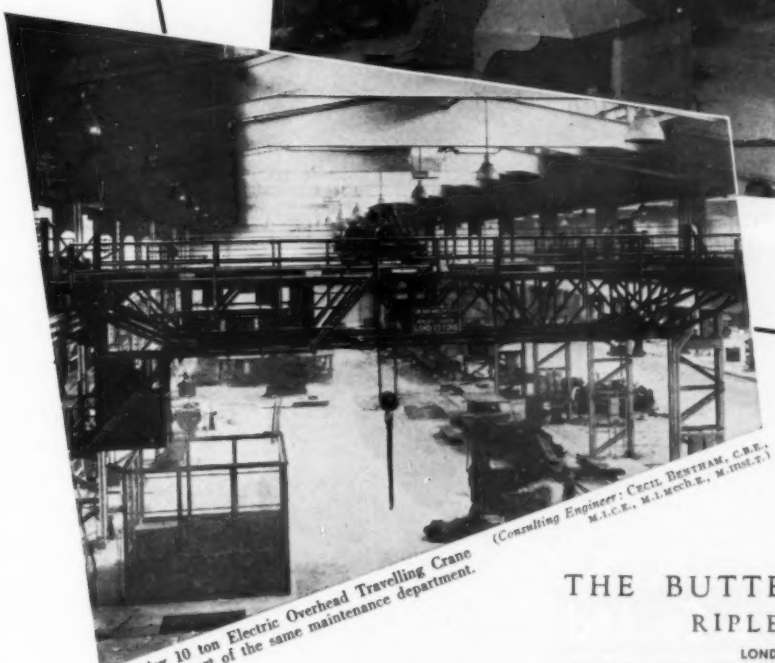

Butterley 10 ton Electric Overhead Travelling Crane in another part of the same maintenance department.

(*Consulting Engineer*: CECIL BERTHAM, C.B.E., M.I.C.E., M.I.Mech.E., M.Inst.T.)

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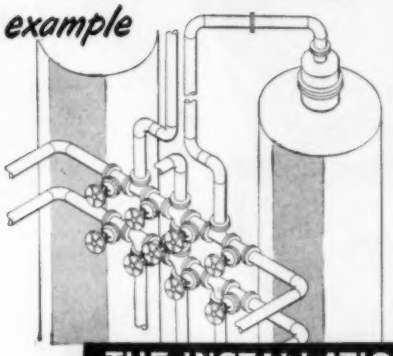

THE INSTALLATION

Nine Crane valves on control manifold to reaction chambers on Perco Cycloversion Unit. Bareco Oil Company, Wichita, Kansas.

VALVE SERVICE RATINGS

SUITABILITY:	Matches service needs
MAINTENANCE COST:	None to date
CORROSION-RESISTANCE:	O.K.
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Valves formerly used would not stay absolutely tight as necessary. Down time for repairs was excessive. Fluids handled: At oil inlet, straight run gasoline at 950 Deg. F., 85 psi; for catalyst regeneration, air-steam mixture at 850 Deg. F., 15 psi; regeneration waste gases, 1200 Deg. F. at 5 psi. Approximately 15-day cyclic operation.

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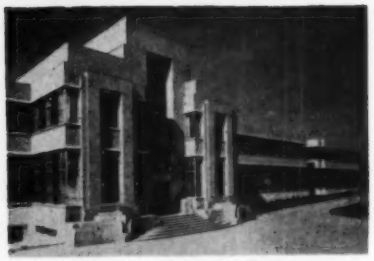

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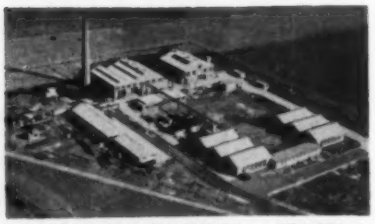

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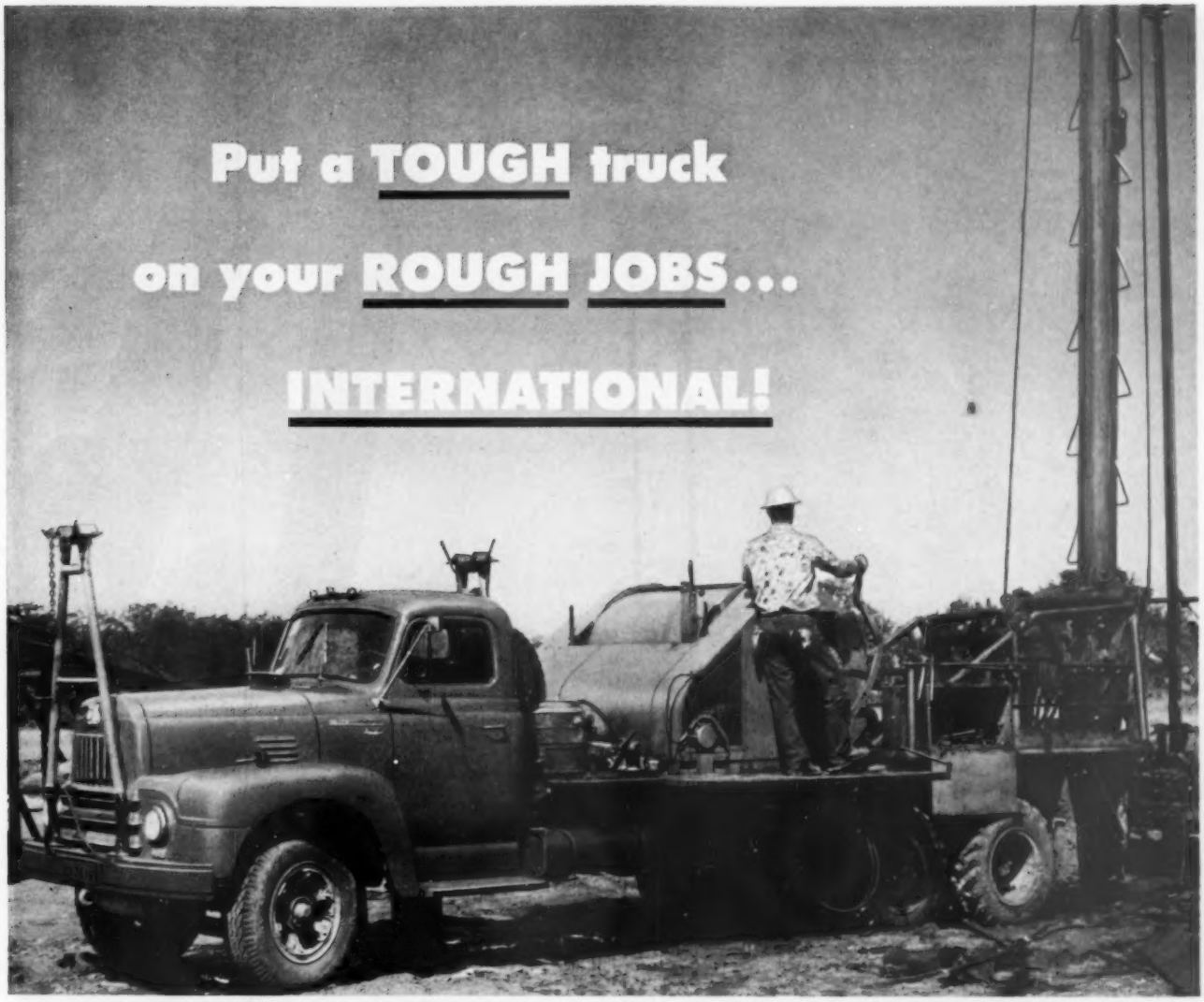

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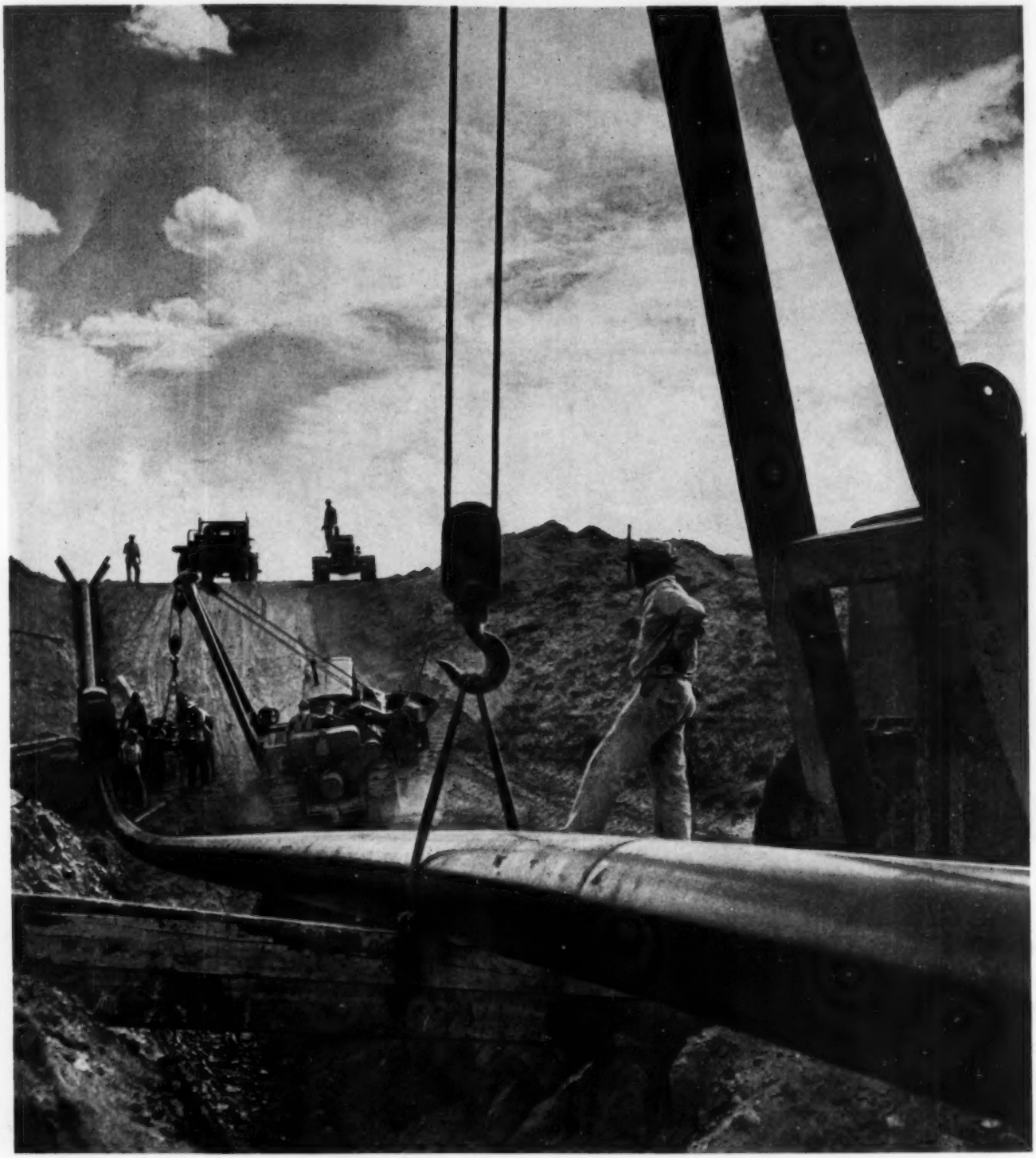

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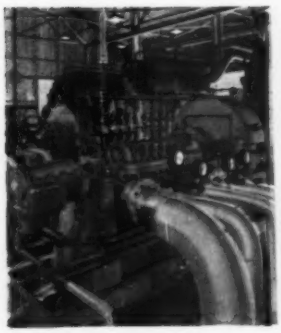
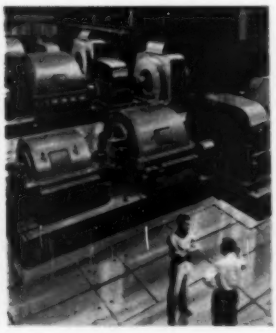


Pacific Pumps, Inc., *Huntington Park, Calif.* Centrifugal pumps, deep oil-well plunger pumps and boiler feed pumps.



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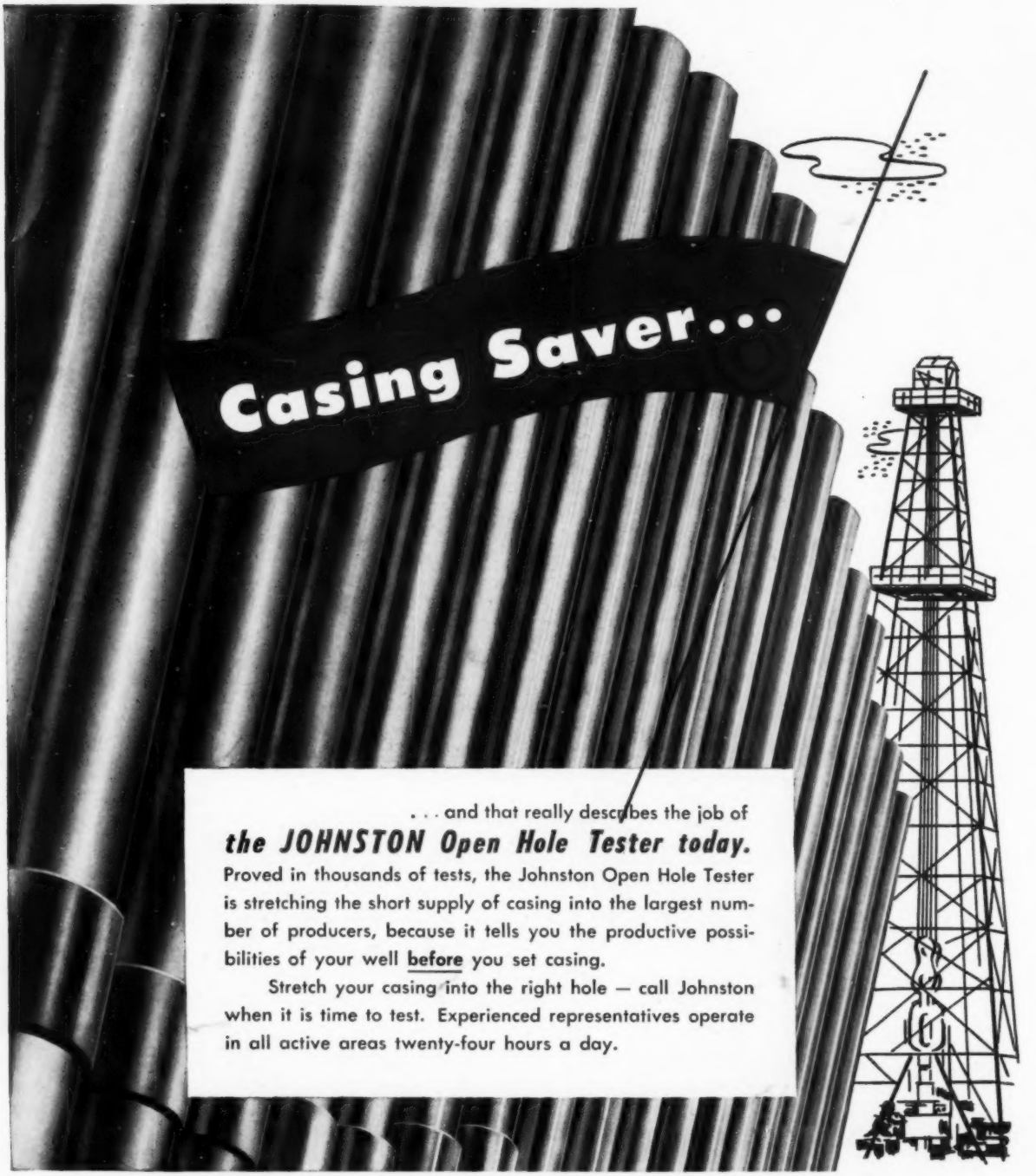

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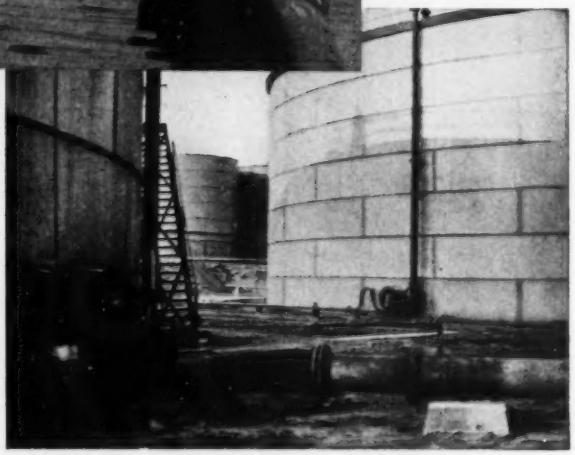

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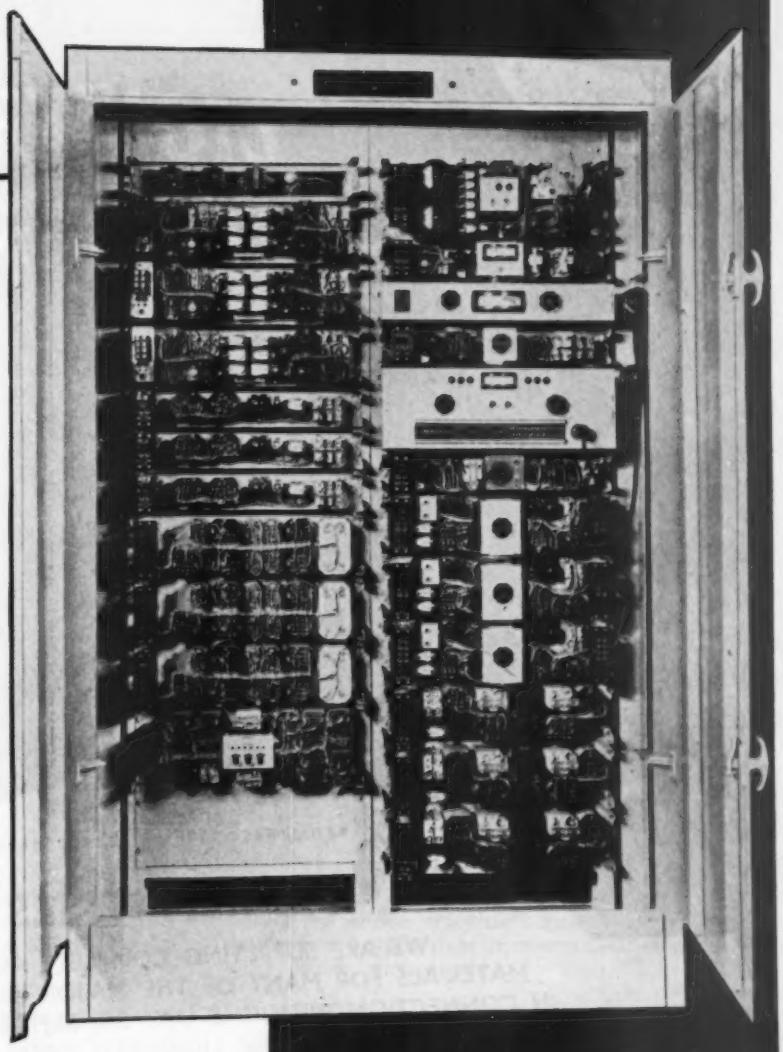

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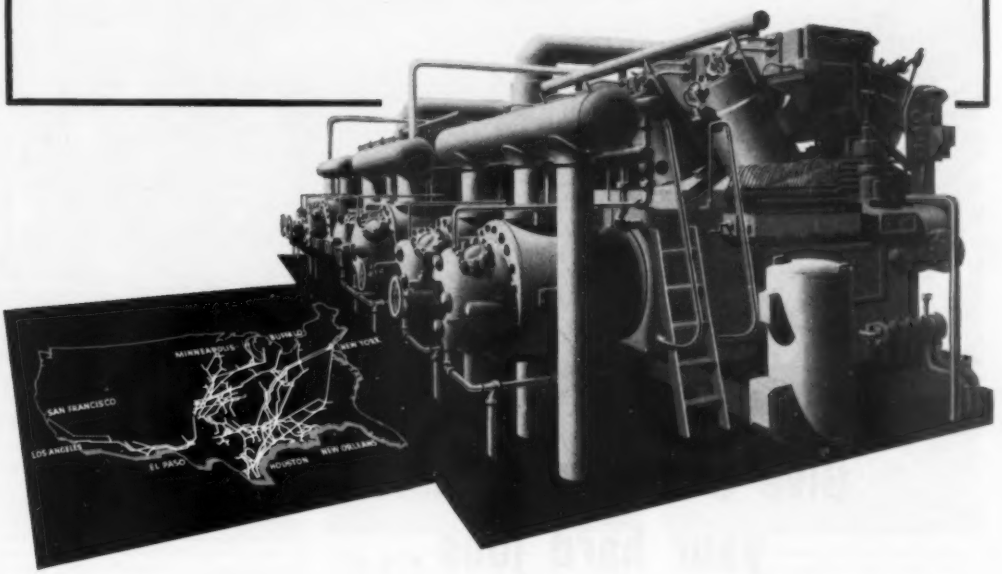

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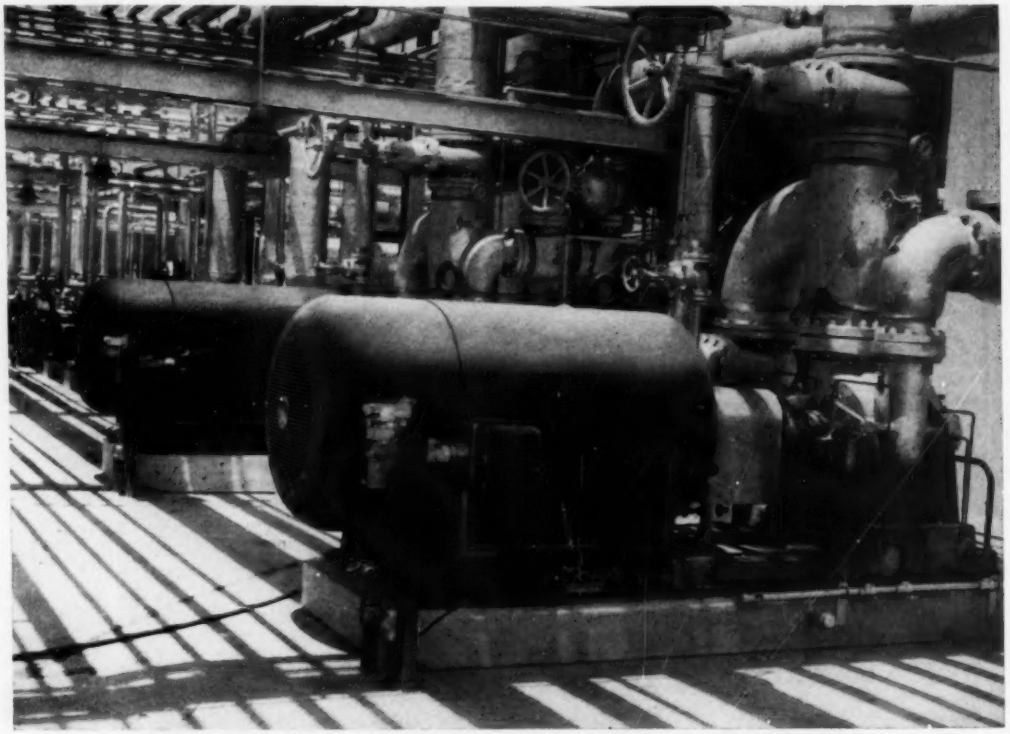

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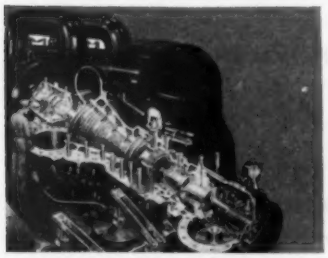

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THIS MONTH'S COVER

Crude oil storage tank under construction at Edmonton, Alberta, Canada for Interprovincial Pipe Line Co. which is delivering Western Canada crude oil to Superior, Wisconsin for shipment by water through the Great Lakes. Photo courtesy Imperial Oil, Ltd.

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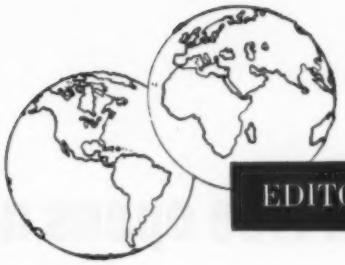


EDITORIAL

THE MOVE TO VITALIZE A BOGUS ISSUE

IT HAS LONG BEEN considered an axiom in party circles in America that the cheapest and easiest way to build political capital is to attack big business, and among all the representatives of large scale operations, the favorite target for attack has been the oil companies. This is largely because leading organizations in the oil industry, through their concentration upon research, their constant experimentation with new and improved processes and their readiness to discard old methods and equipment in favor of more efficient means of operation, have been conspicuously successful.

The oil industry has had its full meed of ill-founded or maliciously based assaults extending over many years. It has had to spend millions of dollars in legal defense and other millions in preparing elaborate reports or in appearances at investigations intended to produce evidence of activities illegal or unethical. Sometimes the charges have fallen for sheer lack of support, as in the celebrated "Mother Hubbard" suit which sought to indict a whole industry, including bureaus whose activities were purely administrative or technical. Some of the issues raised have been worn threadbare by long use and frequent refutation. Some of the charges have been blunted as weapons by the growing public understanding based on close association, that the industry is as highly competitive as any that can be found and that its claim to public confidence is based on constant improvement of products and a steady cheapening of their price, together with ever improving service. Thus it becomes necessary to find a new basis for attack.

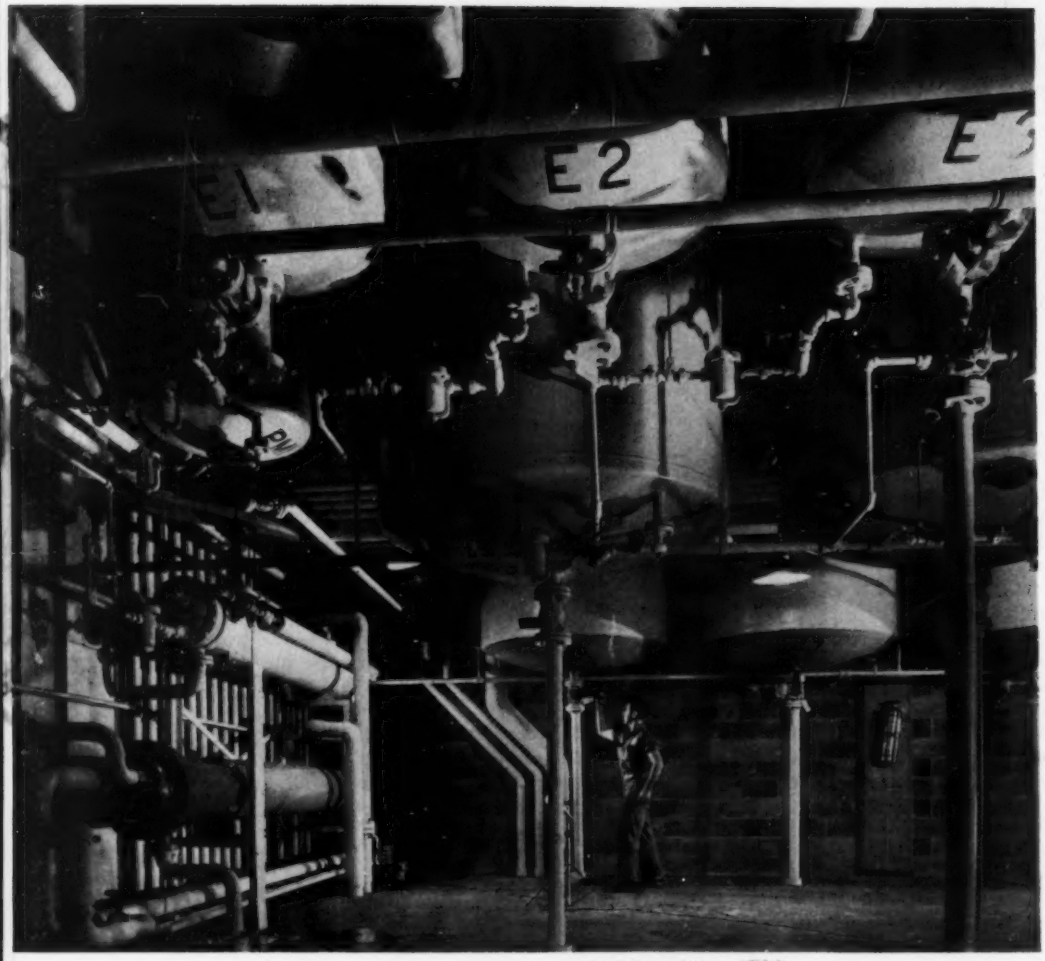
One of the favorite allegations against American companies operating abroad has been that they participated in cartels and in other trade practices forbidden by American law. These assertions have been aired in Congress and have appeared in print. More than a year ago, a representative of a Congressional committee studying international cartels was sent abroad to seek support for these accusations.

Since that time, mysterious hints have been dropped in Washington of a report disclosing the horrid details of these cartels and of participation in them by American companies. Neither specific charges nor the report on which they presumably were based have been made known. In fact, they have been classified as top secret, reportedly on the advice of the State Department that publication might disturb the nation's foreign relations and jeopardize national security. Nevertheless, there is now talk of a possible grand jury presentation and the names of the companies that are to be pilloried are freely mentioned in Washington.

Directors of one of these companies, Standard Oil Co. (N. J.), have not waited for the whispering attack to come into the open, but have made the position of their company clear by reissuing a statement published in substance several years ago. It declares: "We are on the side of free markets and vigorous competition wherever we do business. Moreover, we have repeatedly pressed this point of view in action and word at every opportunity. This company is not a party to illegal arrangements of any kind, including those which would fix prices, allocate markets, or control or restrict oil production, anywhere in the world."

As the statement further points out, it is obvious that American companies operating abroad must conduct themselves in accordance with the laws and regulations in force in the various countries just as foreign owned organizations doing business in the United States are expected to observe the laws of this country. As is perfectly well known to everyone acquainted with the international oil industry, there are countries where price fixing is firmly established and some in which the areas where a company can sell are prescribed by governments or in which the quantity of products it can market is definitely fixed. In many parts of the world, including most of Europe, the word *cartel* carries no shuddering implication, but trade agreements are officially encouraged. American companies do not approve restrictions which they look upon as hampering competition and retarding growth, but in order to do business at all they must carry on in accordance with national requirements. Any attempt by agencies of the American government to dictate the laws and business methods of other independent nations is certain to fail and the only imaginable reason for an attack on American companies engaged in international operations is to damage the industry at home, a futile effort if the facts are made known.

Cities Service opens new grease compounding



Interior tankage in heated and air conditioned areas in the new Cities Service plant are suspended so that flow of oils and additives is by gravity. All photographs with this article are by Torkel Korling for Cities Service.

Tankage fronting on heavily traveled Cicero Boulevard have been painted as attractive billboards where they are seen by thousands of motorists each day. At right: Cartons of canned oil and greases are palleted and moved to loading platforms by fork truck.

plant at Chicago

WITHIN THE NEXT 30 days Cities Service Oil Co. (Delaware) will place in operation at Chicago a new grease plant which will operate in conjunction with a multi-million dollar lubricating oil compounding installation erected in 1950. The new integrated operation is part of the post-war program adopted by Cities Service to increase its lubricant capacity and to reduce distributing costs.

First step in the program was the erection of the $42 million Cit-Con refinery at Lake Charles, La., which is producing some 6,000 barrels daily of lubes from selected Mid-Continent crudes. This entirely new lubricating oil refinery was completed in December 1949.

To minimize transportation costs of packaged and barreled lubricants, the Cities Service management set up four compounding and grease manufacturing plants to which bulk stocks could be moved for finishing into the 1,500-odd individual lubricants demanded by the complexities of modern industry, transportation and the home.

The Ponca City, Oklahoma, refinery is the site of the distributing center for lubes for the Southwest and Rocky Mountain areas. Shreveport, La., is the compounding center for Southeastern states. The Atlantic seaboard is supplied by oils and greases blended at Pettys Island, Pa., in the Philadelphia harbor area. The new Chicago plant now nearing final completion will supply the upper Mississippi Valley and Great Lakes states.

Both the Pettys Island and new Chicago plants are supplied by low-cost water transportation from Lake Charles. The Chicago installation is on the ship canal at Cicero, Ill., and is equipped to unload barges which make the 3,200-mile round trip from Lake Charles in three weeks. The Mississippi and Illinois rivers and the ship canal are open for year-round navigation. Base lubricating oil stocks arrive in 672,000-gallon barge lots. Storage capacity for incoming shipments of raw stocks and bulk storage totals 7,000,000 gallons.

Finished products are shipped to Cities Service and jobber bulk plants and to industrial consumers by railroad and tank trucks. The 42-acre site has ample room for loading and unloading tank cars, dry freight cars and all types of road transport trucks.

The grease plant addition to the Chicago terminal will have added greatly to the terminal cost when it is completed later this month. It will have an annual grease making and packaging capacity of 8,375,000 pounds. The original lube blending plant has a capacity of 25 million gallons of oil per year.

Because of the great multiplicity of greases which must be manufactured at Chicago, it was decided that batch processing would be more desirable than the newer continuous methods. The continuous methods are applicable at refinery

Transportation of products into and out of compounding and blending plant are by water, tank car and truck. Photo at right shows barge tied up at ship canal dock for unloading lube stocks from the Gulf Coast; center, meters on tank car loading and unloading rack; left, trucks being loaded beside main building.

compounding plants where production of individual items is larger than at a regional plant such as Chicago.

When the original blending plant was built two years ago, it was designed in such a manner that future grease compounding activities could be integrated with the existing operations. Utilities and oil heating equipment were designed for the expansion. The conveyor system of the blending unit was so arranged that the grease system could be tied in with it for movement of packaged goods from canning equipment to loading docks. An entirely new element in this system is the pendant type drum elevator. It is designed to move empty drums from the basement to the second floor for filling, full drums from the first floor to the second for storage, and full drums from the second floor to the first for shipment. The elevator is designed to load and unload drums automatically once the stations have been set for drum size and flow.

Platform scales and level sections have been provided in the grease department for weighing and stencilling drums. Movable sections have also been provided for easy access to the grease department when the conveyors are not being used.

In the manufacture of grease a considerable tonnage of both dry and liquid additives is used and a secondary conveyor system becomes desirable. In the new Cities Service plant a monorail system connects the kettles with the storage area on the third floor. In this area are dry additive bins which are charged from the fourth floor level. A Fairbanks Morse overhead track scale is set in the rail for additive weighing. Nozzles from the bins open down adjacent to the track scale.

On the fourth floor adjacent to the bins, a steam heated cabinet has been provided for storing drums of liquid additives. Both the cabinet and the bins may be served by either truck or chain hoist and monorail. Piping has been arranged to flow additives from the heated drums to the vicinity of the overhead scale for weighing. Additional space has been provided to heat additives to be used in drum lots.

Two track-hung tanks have been provided for weighing and transporting additives from the bins and hot drums. A chain hoist with drum hook and pallet has been provided for weighing and transporting drum and package lots.

Oils to be used in grease making are transferred from bulk storage in one or more of the outside tanks to stock tanks in the hot room directly above the pump room. Outside tankage consists of 42 Graver-built tanks ranging in capacity from 10,000 to 420,000 gallons. Each of the eight inside stock tanks has a capacity of 4,200 gallons. In addition to these specialized tanks, the grease compounding section is connected with a number of inside heated tanks containing oils used in the blending department. All told there are 18 liquid storage tanks storing petroleum and other oils, fatty acids and additives such as pour depressant. Each stock tank is heated by a Brown Fintube steam coil which is controlled by a Fulton-Sylphon temperature indicating control valve. The bulb or pilot for this valve is located in a thermo-well in the side of the tank. Each tank is also equipped with a Varec tank gauge. The heater control valve and the gauge look box are located at the top of the tank.

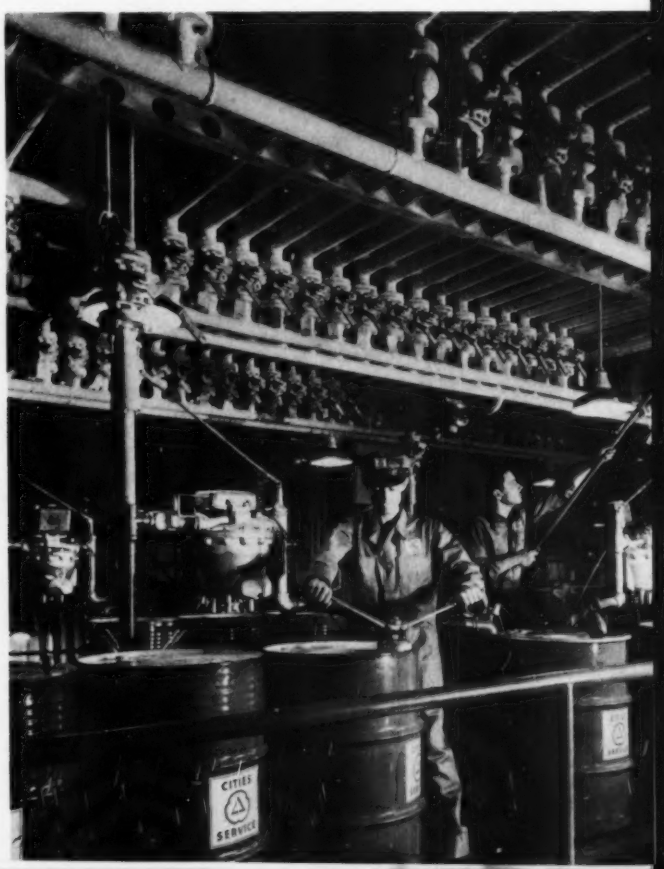
Four stock pumps and five grease pumps are employed to move material and product. All are Yale-Towne tri-rotors of the positive displacement type, equipped with variable volume heads capable of regulating the volumetric capacity of the pump from full to zero capacity. The variable volume feature is automatic in the case of stock pumps although a manual flow control is provided.

The grease pumps provide for variable volume but the automatic feature is eliminated. Consequently the grease pumps are provided with external relief valves.

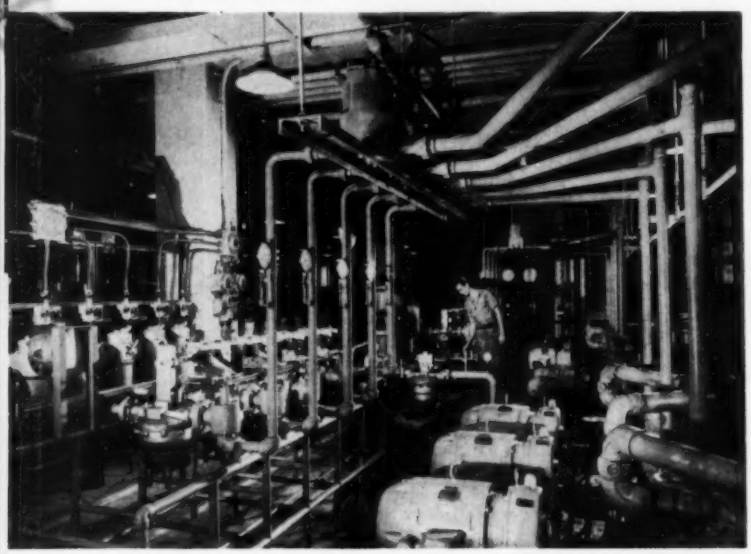
Centrifugal pumps are provided for high temperature service. These are furnished with water connections for bearing and gland cooling.

Grease making equipment consists of two contactors and four kettles. A small contactor has a capacity of 100 pounds and a larger one 6,000 pounds. Two kettles have 1,000-pound capacity, one 8,000 pounds and one 15,000 pounds. The four grease kettles are of the stirrer-scraper type designed to mix the contents intimately by means of two counter-rotative

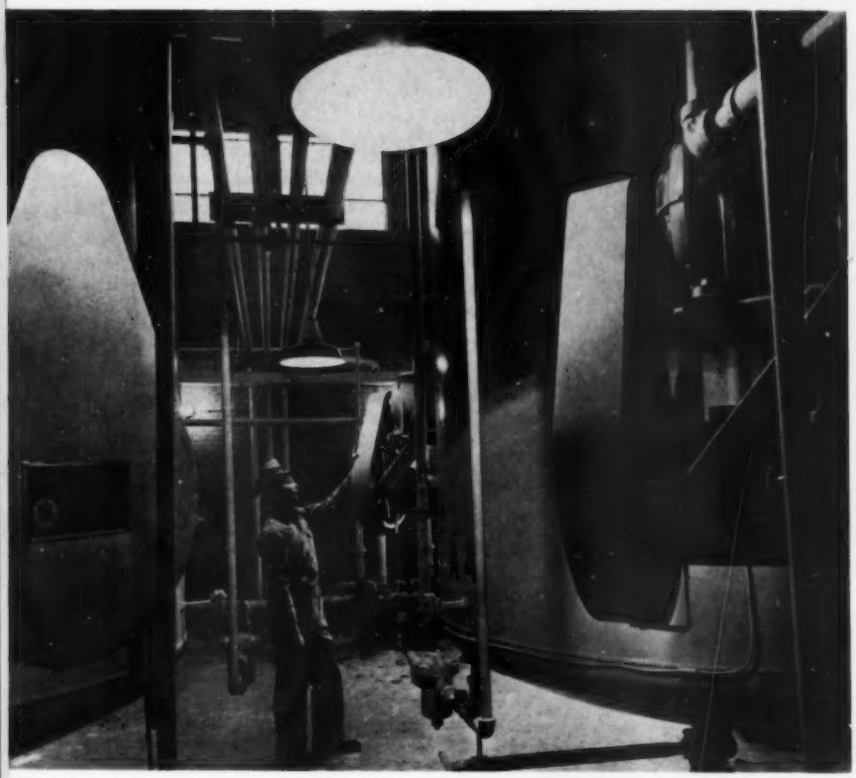
Drum filling on the conveyor line is carried out at the rate of one 55-gallon drum per minute.



Continuous blending of lubricating oils is accomplished with two 5-meter proportioner systems.



Right, seven 200 gpm pumps and seven 100 gpm pumps are used to transfer oils from outside bulk storage to inside working tanks. Short connections to individual product lines keep slops at a minimum.



Left, "mix-master" agitators used for stirring contents of 300-barrel blending tanks.

assemblies. The center assembly is provided with multiple blade impellers to pump upward. The outer assembly is equipped with impellers to pump downward and arranged to scrape the walls and bottom of the unit. This arrangement is intended to turn over the content and provide interstage mixing between inner and outer impellers as well as to clean the walls and bottom of the unit. With minor differences, the four grease kettles are built after this design.

All kettles, including the contactor, are provided with manways, fill, vent and vacuum, circulation and air nozzles. The 6,000-pound contactor, 15,000-pound kettle, and 8,000-pound kettle are also equipped with Pyrex observation ports.

The kettles and contactor are heated by means of an external jacket through which hot oil is circulated. The contactor also has an internal jacket or tube for hot oil circulation.

The 6,000-pound contactor is built with two concentric sections separated by the heating tube. A motor-driven hydraulic head which is similar to a centrifugal pump impeller is arranged at the bottom to circulate the content throughout the two compartments. Circulation is at the rate of 8,000 gpm when operating at 1,160 rpm. The 100-pound contactor does not require an internal heating tube.

Two weigh tanks are provided for charging the contactors. One is for weighing dark oils and is steam traced and insulated. The second is for light oils. Both are equipped with float switches. The weigh tanks are hung on a lever system which is part of a Toledo hopper scale. The lever motion is transmitted by a rod to the dials located near the control board. Dial capacity of the scale is 2,000 pounds in 2-pound intervals and may be read to one pound.

The heater system consists of a three million Btu/hr gas fired heater, a 4,300-gallon surge tank, a heater circulating pump, and a jacket circulating pump. Oil is charged at the top and passed downwards through the convection sections, through a strainer and into the radiant section before passing into the surge tank. Recording and control instruments for the heater are mounted adjacent to the graphic-type central control panel. On the central panel are mounted pressure gauges and control stations for the stock pumps and grease pumps, push buttons for the jacket oil pumps, and ammeters and push buttons for the kettles. The simplified flow diagram of the grease department on the panel shows principal oil transfer lines, grease lines and major items of equipment as well as principal valves on the grease lines.

Discharge valves on the stock pumps have stems protruding through the panel for ease in controlling the transfer of oil to the weigh tanks. Similar stems on the header pumpout system are provided for control from the panel front. Each batch

Small quantities of oils are blended in batch kettles ranging in size from 378 to 1,680 gallons. All are equipped with power mixers and heaters.

of oil weighed requires opening and closing of an overhead valve behind the panel. After the batch has been weighed and the valve closed, the contents of the suction header and discharge line may be pumped into the slop tank. Each pump is piped to slop its own suction header.

Safeguard panel for the oil heater is located in the heater room and contains the blower push button, safeguard switch and Flame-o-trol unit. Two Maxon safety shut-off valves are located in the main and pilot fuel lines respectively. These valves are electrically operated but must be manually opened. They are caused to operate by flame failure, excess oil temperature, or material decrease in the flow of oil through the heater.

An Edwards electric horn is interlocked with each of the safeguards to sound a warning should any of the devices function. The blower motor is also interlocked with the safeguard circuits. The safeguard switch kills the supply to the entire control circuit. The heater is also equipped with a Peabody single lead gas electric ignitor.

For emergency use, the heater room is equipped with two 1½-inch steam snuffing nozzles. The valve which controls these nozzles is remotely located.

The vacuum equipment includes a counter-current condenser connected to a two-stage vacuum pump consisting of a 2-inch high vacuum exhauster, a barometric inter-condenser, a 1½-inch low vacuum exhauster, steam stop valves, strainer and separator.

The condenser is connected to the kettles through a header. It educts the air and water vapor from the kettles, condensing the latter. Vacuum is maintained in this unit by the high vacuum exhauster. Steam passing through the high vacuum exhauster is condensed in the inter-condenser. The inter-condenser delivers air and other non-condensibles to the low vacuum exhauster which discharges into a vent. Both the condensers and the vent have legs extending to a water seal in the basement.

The assembly will condense 275 lbs/hr of water vapor and educt 25 lbs/hr of air, producing a vacuum of two inches of mercury absolute when supplied with 25 gpm of water at 70°F. and 145 lbs of steam/hr at 140 psig.

Manufacturing procedure to be followed begins with running into the contactor the amount of oil planned. Lime is then added and slurried into the oil, fatty acids added, and caustic soda and water follow while mixing continues. The contactor is sealed and heated by the hot oil system, with mixing continued as long as the soap is in the vessel.

After laboratory approval of the soap stock, it is transferred by pump to a working kettle where the desired oil is added and vacuum applied to make use of evaporative water cooling and to control final water content of the lubricating grease. The oil jacket may be used for supplemental cooling if circumstances require, as there is a cooling oil system available. The lubricating grease thus produced is released after laboratory approval for filling into containers. Filled containers are moved by conveyors to the shipping stock area. Cartons and drums are palletized and moved by fork trucks to storage space or loaded directly into box car or truck.

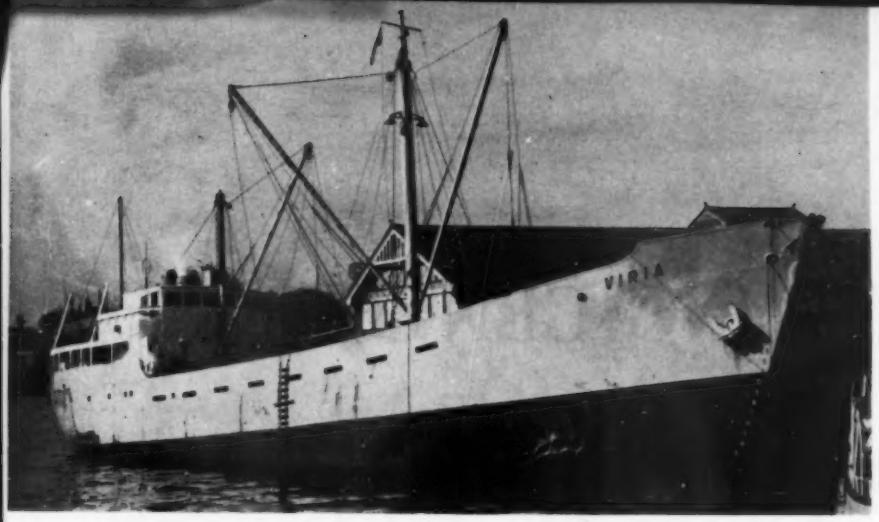
Main building at the Chicago plant, which houses both the blending and grease operations, is a four story structure 140 by 450 feet. It was necessary to add to the original 150,000 square feet of floor space in order to take care of the compounding equipment.

The lube blending equipment includes 32 kettles ranging from 400 to 1,700 gallons capacity. These are supplemented by two automatic blenders for quantity product production. Each automatic blender has a capacity of 100 gpm.

Nine filling lines are provided. One line handles cans of various sizes for specialty products. Three lines care for standard size cans: a one-quart line with a capacity of 300 cans per minute, a five-quart line handling 35 cans per minute, and a one, two and five-gallon line handling six cans per minute. There are five drum lines, each with a capacity of one drum per minute.

A mile of conveyor systems brings containers to the filling lines and carries cartons to storage or loading platforms.

When completed this month the lube blending and grease plant will be one of the largest of its kind in the country and will supply Cities Service distributors and customers over a wide area in the Middle West.



Motor ship "Viria" which distributes Vacuum products in Papua and New Guinea.

VACUUM OPENS BULK TERMINAL AT PORT MORESBY

THE FIRST commercial bulk petroleum terminal to be built in Papua was placed in service at Port Moresby last October by the Vacuum Oil Company Pty., Ltd., Stanvac's Australian affiliate.

Col. J. K. Murray, the administrator of Papua and New Guinea, officially opened the new $280,000 installation. Present at the ceremony were more than 300 guests, including Australian government officials, members of Colonel Murray's administrative staff, businessmen engaged in development work in Papua, airline and shipping representatives and petroleum consumers from many adjacent centers.

The Vacuum Oil Co. was represented by F. H. Carlson, finance director; W. C. Fraser, manager, Pacific islands; and C. R. Heavey, Vacuum's manager in Papua-New Guinea.

Port Moresby's new bulk terminal brings modern servicing facilities coupled with regular, assured supplies of petroleum products for the many industries and enterprises engaged in developing the resources of Papua. In addition, the ready accessibility of a wide range of petroleum fuels and lubricants will enable more of the essential amenities and comforts of life to be provided for the people of the district.

Products being handled in bulk form at the Port Moresby terminal are aviation gasoline, motor spirit, and industrial and automotive diesel fuels.

At the opening ceremony the company announced that as a result of economies that would be effected through bulk handling, the following price reductions would be made: distillate, 10c a gallon; diesel oil, 10.8c; motor spirit, 18.9c; and aviation gasoline, 13.8c. This brought the price of motor spirit to 50c a gallon as against 57.2c previously.

Establishment of a bulk installation at Port Moresby, coupled with the operation of Vacuum's bulk terminal opened last year at Lae in the mandated territory of New Guinea, means a complete streamlining of the company's marketing operations in Papua-New Guinea. It also gives Vacuum an investment of more than $560,000 in the future development of that area.

Areas served by either or both of these terminals include Rabaul, Kavieng, Manus Island, Wewak, Samarai and Madang, with distribution effected by the motorships "Viria" and "Erica."

The first shipment of products for the new Port Moresby terminal came from Palembang in the tanker "Stanvac Palembang."

To enable large tankers to discharge their cargoes, Vacuum's engineers laid a 4,300-foot submarine pipe line on the bed of Port Moresby harbor. No deep water berths were available and it would have been impracticable to construct them. This submarine pipe line is the longest of its type in Australian waters, and its construction was an exacting engineering operation.

With sufficient depth of water through the entrance to Port Moresby harbor and at the seaward end of the submarine pipe line, modern tankers can now make Port Moresby their first port of call.

In addition to the submarine pipe line, Vacuum also uses 500 feet of floating pipe line for pumping aviation gasoline from bulk storage to the tanks of seaplanes operating out of Port Moresby.

This new terminal, which is the nineteenth ocean installation operated by the Vacuum Oil Co., stands on a 15-acre site at Idubada, some three miles west of the township of Port Moresby.

Three of the installation's four half-million gallon bulk storage tanks were used by the Army during the second World War. They were purchased by Vacuum and adapted to commercial use.

Apart from the excellent housing accommodation provided on two acres of land adjoining the terminal, covered working accommodation has been provided at the terminal so that all employees, both European and native, work under the best conditions.

W. C. Fraser
Manager, Pacific Islands

F. H. Carlson
Finance Director

H. Rabling
Chairman and Managing Director

H. C. Smith
Operations Director

ISLAND DRILLING CENTER OFF

By L. P. Stockman

MONTEREY OIL CO., successor to Jergins Oil Co. and allied interests, has awarded contract for immediate construction of a drilling island offshore from the coast of Southern California and adjacent to the proposed extension of the outer breakwater at the east end of Long Beach. Construction cost will approximate $1 million and require approximately four months to complete. Location is 1,400 feet east of the breakwater and 1½ miles beyond the tide line in the open ocean. This drilling island will be constructed on a state tideland lease which is held jointly by The Texas Co. and Monterey. Each has a fifty-fifty undivided interest and the latter will be the operator. This step culminates an ambitious move undertaken several years ago to develop commercial production in a tideland accumulation from an upland location at Belmont east of Long Beach.

Site of the projected drilling island is a marine tideland lease of 1,400 acres issued by the California State Lands Commission several years ago and validated in 1948 at a cost of approximately $1 million in attempts to intercept the submerged accumulation from wells drilled from upland locations. These upland wells indicated quite clearly that the tideland accumulation was beyond reach from locations on shore and that a drilling island would be required. Application to construct a drilling island was first filed in April, 1947, and the Army Engineer Corps, which has control over navigation on inland and coastal waters, held a hearing and subsequently approved the undertaking. The tideland permit was held up by the Interior & Justice Departments, however, as each was interested in the attempt of the federal government to acquire control of all tidelands as a result of pending litigation. A few months later, in June, 1947, the United States Supreme Court ruled that the federal government had "dominion over and paramount rights in" the tidelands and so the application was filed away. This decision did not establish ownership, the court holding this was a matter for Congressional determination.

At its recent session Congress passed a quitclaim measure which President Truman vetoed and any further attempt at legislative action can only be undertaken in the unlikely event that Congress is convened in special session. The Republican platform of 1948 endorsed the proposal to quitclaim tidelands to the respective states and the 1952 platform reiterated this position. Permission to construct the Belmont drilling island has recently been secured from the War Department, Justice Department and Department of Interior with the explicit stipulation that this tideland permit is in all respects the same as all previous tideland leases and assumes the same status. These stipulations removed the last obstacle and work will get under way immediately. The Justice Department and Department of Interior are involved under terms of the stipulation between federal and state governments under which all California tideland operations are now being operated. All revenue accruing from the sale of oil and gas is being impounded. The California State Lands Commission, which originally granted the permit, has issued the necessary authority to drill.

The drilling island, which will be constructed by Healy Tibbitts Construction Co., will consist of a circular steel structure which will be filled with sand, clay and rocks and capped with a cement deck. It will be 75 feet in diameter and contain docking facilities and a loading platform for the delivery of equipment and material. All material and drilling equipment will be loaded on barges at Long Beach or Wilmington and will be delivered to the site by water. There will be no direct contact with the upland area and all construction work will be done by using barges and other floating equipment. Complete specifications of the drilling island have not been released, but it is known that the steel shell will be reinforced with concrete piling and surrounded by large rocks similar to those used in the construction of the Wilmington and Long Beach breakwaters. The rocks weigh from fifteen to twenty tons each. The deck will be entirely enclosed by an elevated section seven feet high to minimize the possibility of contaminating the surrounding beach. Stress will be placed on good housekeeping and every attempt will be made to maintain a structure that will not offend the aesthetic sensibilities of the most fastidious or critical person. This will require extreme care and some excellent public relations work as the island will be visible for a considerable distance. Navigation will be protected in the customary manner but only shallow craft will operate in the vicinity of the island.

Steel tanks will be provided for mud storage and circulation as well as a minimum of storage for oil production. Plans call for the laying of a submarine pipe line for delivery of oil and gas to an upland location if needed. The drilling island will be constructed on the ocean floor which at this point is 42 feet below mean low tide and the deck of the drilling structure will be 18 feet above mean high tide.

Monterey's drilling island will be the first of its kind to be erected on the Pacific Coast and its construction and operation will be watched with considerable interest by engineers in general and especially by those connected with the Long Beach Harbor Department because the City of Long Beach is contemplating construction of similar structures along the proposed breakwater so that directionally drilled wells can be bottomed in all parts of the harbor. It is quite likely that drilling sites will be provided along the breakwater because this will permit operators to reach out farther from shore. It is both logical and feasible as this will not interfere with navigation and will at the same time increase the City's recoverable oil and gas.

Nothing can be done by the City of Long Beach until the status of the tidelands is finally determined because the Special Master appointed by the Supreme Court has drawn an arbitrary line across the harbor area to define the limits of Long Beach harbor and within which the city of Long Beach must confine its drilling and production activities. Obviously the starting point and location of the final point are of paramount importance, because a straight line between the two defines what is considered to be tidelands. The Special Master may recommend changing this line and outline appropriate legal principles for determining the low tide line and whether certain bays and channels are inside or outside the boundary line. The federal government has been attempting to reduce the size of the various harbors and bays as this would increase the area which the federal government claims to be federal tidelands.

Monterey Oil Co. is not at all certain whether it has found a new accumulation or whether the upland wells penetrated the outer limits of the Wilmington field which extends across Long Beach Harbor. Tideland development has indicated that a substantial part of the Long Beach Harbor section of the Wilmington field lies buried beneath the waters of the Pacific Ocean,

CALIFORNIA COAST

some it it located beyond reach of the drill from upland locations.

It is not at all improbable that Monterey is presently producing in an upland well from this buried section and that at least a part of its 1,400-acre state lease will be found to overlie a part of the Wilmington structure. Cores taken in the series of upland wells which were whipstocked beneath the tideland indicate the fact that the company has penetrated the equivalent of the Ranger, upper and lower Terminal pools and top of the Ford pool. All indications point to the probability that Monterey has intercepted part of the submerged section of the Wilmington field.

From the drilling island, the company will be able to reach out in all directions and may also find commercial production in the Ford and Union Pacific pools. Whether the conglomerate schist will be found productive remains to be determined by the drill. This will not be difficult to reach because the basement in the Wilmington field is around 7,000 feet.

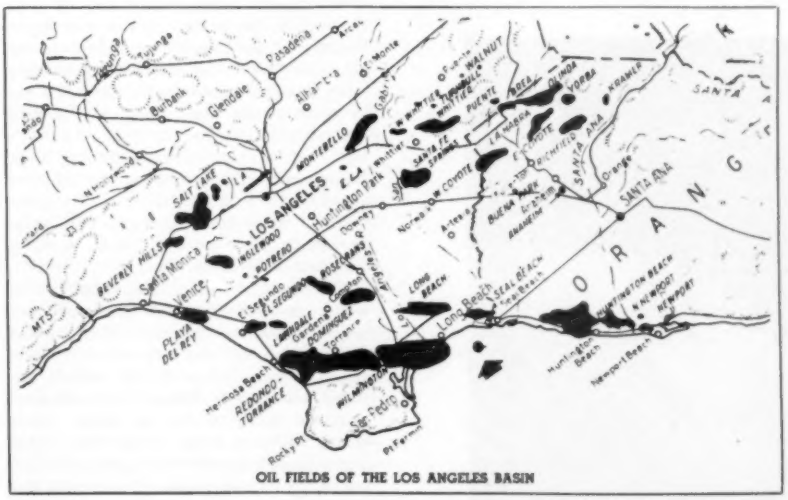
Monterey's projected attempt to develop commercial production from a drilling island in the Long Beach Harbor area climaxes eight years of pioneering and a long wait for conclusion of the tideland controversy. Three directionally drilled wells were undertaken from upland locations in an effort to reach the submerged tideland accumulation, but only one, State No. 2 of Marine Exploration Co., showed oil production. This well was started Mar. 12, 1948, and completed Nov. 7, 1948. It was brought in doing 74 barrels daily but in recent months production has averaged 30 barrels per day. State No. 2 was drilled to 12,131 feet, but it had a deviation from vertical of about 80 degrees and the actual vertical depth was only about 5,300 feet. The horizontal deviation approximated 9,300 feet, a record not approached by any other well in the state. In the drilling of this hole, the drill pipe and bit were not lowered into the hole in the customary manner. The angle of drift was so great that the drill pipe and bit actually had to be pushed into the hole and this ultimately led to all kinds of mechanical trouble because bottom control was reduced to a minimum. It was necessary to improvise special equipment for use in the well.

Experience with California wells indicates that deflections of 70 degrees are entirely feasible and can be reached without much difficulty but that complicated mechanical problems arise when the angle of drift exceeds this point. Two earlier upland wells failed to show sustained production but did give enough encouragement to maintain interest. Progressive development of the Long Beach Harbor section of the Wilmington field proved that a portion of the field extended out into San Pedro Bay as this indentation in the coastline was originally known. State No. 1, which was started by Gilco Oil Co., a Jergins affiliate, was spudded Mar. 12, 1944, and suspended May 27, 1944, at 7,027 feet. The operation was then taken over by Marine Exploration Co. Drilling was resumed on June 21, 1947, and the hole carried forward to 8,050 feet. A plug brought the effective depth back to 7,935 feet, from which point the well showed gas and a little oil. State No. 1 was abandoned January 1, 1948 as not commercially productive. A few months later, Marine Exploration started drilling State No. 2 as outlined above.

Officers of Monterey Oil Co. are Lowell Stanley, chairman; Howard C. Pyle, president; E. E. Pyles, vice president and director; J. H. Abramson, vice president; C. R. Pickering, vice president; C. W. Pierce, treasurer; M. E. Dunn, comptroller; and R. R. Rusmisel, secretary. The company operates in Texas and Oklahoma through a subsidiary, Monterey Oil Co. of Texas, and is a producer of crude oil and natural gas, with a current net production of 9,000 barrels per day. Executive offices of the company have been moved to the Statler Center office building in Los Angeles and a new building, nearing completion at Signal Hill, will provide administrative offices.

Other types of offshore drilling structures have been tried in California but they have all differed in essential details. Work of this nature was undertaken at Elwood a number of years ago but the wells were in close proximity to the coast line. Indian Petroleum built a drilling island on the Shudde permit offshore at Rincon in 1932. This island was located 2,700 feet from shore and 1,800 feet from the end of the nearest pier in Ventura County. This pier is General Petroleum's Rincon facility along which General Petroleum drilled several wells which are still producing. In general, Indian Petroleum's island structure consisted of a foundation made up of structural members formed into piers and a central structural member to give a five point pier of great rigidity and strength. More specifically, it was constructed of a plurality of vertical H-beams driven into shale to refusal and cross connected by structural members to form four compound columns which act as piers. These piers were interconnected by other structural members which acted as tie rods. Centrally disposed from these four piers was a ring of vertical H-columns, all tied together in a ring and cross braced to the corner piers. The central ring thus constructed had, as one of its functions, to act as a vertical compound column. Construction above water level was welded and below water line clamped and bolted. Indian Petroleum's tideland well at Rincon was eventually abandoned and the drilling island was demolished.

Map of Los Angeles Basin oil fields showing location (arrow) of drilling island off Long Beach.



OIL FIELDS OF THE LOS ANGELES BASIN

1. *Fiberglas mat is cut to pattern to fit contours of male mold made of wood which keeps tool costs at minimum. Outer surface is coated with wax, then polished. Surface is then sprayed with 1/16 inch coat of Laminac Resin.*

ARAMCO ADOPTS PLASTIC

2. *After Laminac Resin filled with Celite and white Calco paste has been sprayed on mold, layers of glass mat are added. Tank will have capacity of 1,000 gallons. Each Aramco truck carries two plastic fuel tanks for a total of 2,000 gallons.*

3. *A catalyzed resin sprayed over each layer of glass mat uses three different catalysts which are activated at temperatures ranging from 70° to 200°F.*

ARABIAN AMERICAN OIL CO. is using newly-developed fuel and water tanks on some of its trucks carrying fuel and water across Saudi Arabian deserts. The new tanks are made, not of the usual steel, but of American Cyanamid's Laminac polyester resin reinforced with Owens-Corning's Fiberglas mat.

Aramco has equipped fifteen trucks with the new tanks, two 1,000 gallon fuel-carrying tanks and one 100 gallon water tank, which are expected to last from 10 to 50 times as long as steel containers. Replacement costs of steel tanks have always been a major problem on the desert. A sandstorm rips off the paint, night dampness starts corrosion, the next sandstorm takes off the rust, and the process starts all over again. The plastic tanks cannot rust and problems posed by severe weather are kept at a minimum.

Another advantage is that the inside of the plastic tanks cannot corrode from the salt in crude and refined petroleum. Because of their lighter weight, and because reinforced Laminac is stronger than steel, pound for pound, plastic tanks can be made larger than steel ones, adding substantially to the payload. Aramco's new fuel carrying tanks, weighing 1,000 pounds mounted, have over a third more capacity than steel tanks of the same weight. Both the water and fuel-carrying tanks have smooth inside surfaces that can be steamed clean.

The terrain in the Arabian desert over which these trucks must travel presents many hazards to driving, including sand drifts which can overturn a truck. Here again, the new plastic tanks provide an added advantage. Reserve kits are kept available in the fields for quick repair of any ruptures in the tanks. The mending of breaks involves only a simple cleaning of the ruptured area, then closing and

7. *Finished fuel-carrying tanks are secured to one of Aramco's new trucks destined for punishing duty on deserts of the Middle East. 100-gallon water tanks made of the same material are mounted in left rear of cab.*

6. *The tanks are secured to steel holsters and are held in place by steel bands. The entire band and bolster are then covered with the Laminac-Fiberglas combination to make a solid, firm, corrosion-proof piece. The plastics fabricator envisions reinforced Laminac gasoline storage tanks.*

TANKS FOR DESERT USE

reinforcing the rupture with the plastic-impregnated Fiberglas mat included in the repair kit. When a steel tank is broken, the break must be welded and in the case of inflamables, the tanks must be drained and thoroughly steamed before welding.

Other applications of the Laminac-Fiberglas combination on the new trucks include the housing for the pumping mechanism and walkways along the truck's sides. The tanks are molded by a special process as shown in the accompanying illustrations.

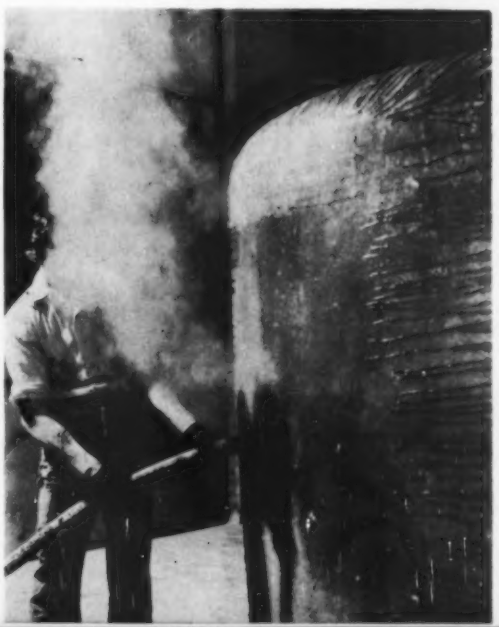
Aramco turned to reinforced plastic for tanks following a field request for a 2,000 gallon service tank that would dispense both gasoline and diesel oil. Since this called for major dimensional changes in design, Aramco decided to look into other possible changes at the same time. The most serious was corrosion, which reinforced Laminac solves.

The plastic fabricator spent about a year in research, testing and planning before the first tank was made. Now he receives a bare chassis with cab from Kenworth Motor Truck Corp. in Seattle, molds the plastic tanks and other parts, makes the bronze fittings, then ships the completed trucks to Aramco.

The plastic-glass combination, a polyester resin with mats of fibrous glass imbedded in it, was conceived during World War II to perform a number of vital military services. Because ultra high radio frequencies travel through reinforced plastic, it was first used in aircraft radomes, housings for the delicate electronic components of radar.

During and since the war, reinforced plastics have found many civilian and military applications. Research and development work is underway on reinforced plastic pipe and the results to date look promising.

5. *The bronze port-hole fittings, valves and steel supporting straps are assembled and thoroughly anchored in place with additional Laminac-impregnated Fiberglas mat. Here, fitting is being inserted into tank.*



4. *Before final cure, two tank halves are assembled and reinforced inside and out with Laminac-impregnated Fiberglas tape, making a perfect bond. Live steam is shot into interior, causing high temperature catalyst to react.*

FIBERCAST PLASTIC PIPE

finds use as

Lowering string of plastic tubing into well. Second elevator will be used to let down the next joint after it has been screwed to this collared joint. Photos by T. Denis Gardner.

By T. Denis Gardner

DURING THE WEEK of May 15-23, 1952, approximately 3,500 feet of a new kind of plastic tubing was successfully installed, tested, and accepted by the Superior Oil Co. for salt water disposal at an old exhausted oil well in the Evangeline field at Jennings, Louisiana.

The tubing is called *Fibercast*, and is manufactured by Perrault Brothers, Fibercast Division, Tulsa, Oklahoma. It is made of thermosetting resins whose chief characteristics—infusibility and insolubility—distinguish them from thermoplastic resins of which most plastics on the market are made today.

Whereas many plastics are brittle and will shatter with little impact or force and melt or distort in excessive heats, Fibercast will take much greater force and pressure before breaking, and is a good structural part in temperatures between 65 and 300°F. Though it will start to disintegrate in heat above 300°, it will not melt.

Fibercast was developed principally with a view to use in the oil industry as it is chemically resistant to all oil field fluids, salts, and oils, and even to weak acid and alkali solutions.

Fibercast can take the place of many ferrous and metal pipes on the market and do a better job in certain instances because of its non-corrosive properties, but it is not intended to replace metal pipes as some of its physical properties are much lower. For instance, as temperatures are raised, its pressure limitations are lowered somewhat. All thermosetting plastics are considered stable between 65 and 300°F.

In the installation in Louisiana, the Fibercast was used to replace the original steel tubing which had been corroded by mineral deposits and salt crystalization after two years of previous use as a salt water disposal well from various oil wells in the field. The original depth had been 5,256 feet. A cement plug had been set at 4,267 feet, below two wide layers of sand at 3,518 to 3,548 feet and 4,080 to 4,120 feet which would take up the water as it was pumped down.

Just previous to inserting the Fibercast, a new Baker Type D production retainer packer was set at 3,495 feet to seal off the space between the plastic tubing and the old 7-inch casing. W. S. Law, vice president of Superior Oil Co., and H. L. Franques, chief district engineer, both of the South Louisiana district office, had supervision of the installation. A. F. Carpenter, district production superintendent, and J. C. Johnson, production engineer, had immediate charge of the job.

Ivan M. Rice, consulting engineer for salt water disposal, assisted by R. S. Shackelford and Ken Schafer of Perrault's Tulsa office, directed the job from the manufacturer's specification requirements for the handling of Fibercast.

Fibercast is made in collared and threaded 20-foot lengths, and the string of tubing was made up and handled with two elevators, the same as sucker-rods are put down into a pumping oil well. No slip was necessary on account of the light weight of the tubing, each piece weighing only about 40 pounds.

In making up this string, a coated steel nipple was screwed onto the first joint to run into the packer slip joint. Each length of Fibercast was picked up from the pipe rack by one man, and hoisted up the ramp to the rotary table platform, where its collared end was picked up by another man with a rope sling hanging from the elevator link. The usual crew of four men was used on the rotary platform, although two or three could easily have handled the job on account of the light weight of the tubing. The tubing was screwed into the joint about half-way by hand, while the man on the upper platform steadied it with only one hand on the top end. The joint was completed by use of a friction-type Parmalee wrench. A special graphite base lubricant was used in making up the joints. Two men worked on the ground level with a Parmalee wrench to steady the tubing as it was lowered into the hole.

A section of 3½-inch O.D. tubing weighs only 40 pounds and is easily lifted by one man at Superior Oil Co. salt water disposal well in the Evangeline field, Jennings, La.

oil well tubing

To make the exact overall dimension length of 3,495 feet of tubing to reach the packer, a piece of Fibercast had to be cut, and a coupling plastic welded to the short joint. This had to set several hours for proper hardening. In the meantime, a special coated steel swage nipple, a 3 inch by 2½ adaptor sub, was made ready on which to hang the tubing from the Christmas tree.

In laboratory tests, the Fibercast assembly, which includes threads, couplings and glue line, had a tensile strength of 7,000 pounds, while the tubing itself had a strength of 10,000 pounds in tension. Since the 175 pieces of Fibercast installed weighed about 7,000 pounds, it afforded an opportunity to test its full capacity in tensile strength before the string of tubing came to rest on the packer 3,495 feet below. Since the operating pressures of this particular 3½ inch O.D. tubing (3 inch I.D.) are 300 psi internal and 500 psi external, and the static bottom hole pressure of the salt water was approximately 1,537 psi, it was necessary to equalize the external and internal pressures by pumping fresh water into the annulus between the tubing and the casing. Some water was also pumped into the tubing, and after the pumping was stopped, the water stood in the tubing to a height of several feet before it ran off into the sand layers.

While exerting pressure on the tubing to get it to go down far enough into the packer to make the top nipple fit the Christmas tree, apparently the tubing accidentally opened the packer flap-valve, and the salt water back-flowed, allowing sand to get into the tubing and above the packer. This made a tight seal impossible until the sand was removed, therefore, all the tubing was pulled up and laid aside, and the sand flushed down below the packer with more fresh water.

In order to insure a tight installation in case threads might have been damaged in the removal process, Perrault Brothers delivered a load of new Fibercast from their Sand Springs plant by fast truck. This new tubing was installed in the same way as the first, except that handling was speeded up and the whole string was set in only seven hours.

This time there was no difficulty in sealing the tubing to the packer below, in equalizing the water pressures, nor in sealing the tubing to the Christmas tree. A pump was installed to deliver 100 barrels per hour at 50 psi into the tubing. The well's capacity is 1,300 barrels per day. After three days of successful operation, Superior Oil Co. expressed its approval of the installation.

Some 20 to 30 years ago, when the oil industry was new in Oklahoma, the Perrault Brothers, Ainslie and Lewis, were one of the first pipe line equipment manufacturers, pioneering in the field of designing and development of machines for wrapping, coating, or otherwise protecting metal pipe from corrosion. They also designed and manufactured equipment to clean and bend steel pipe for all industrial purposes, especially in the oil fields and allied industries. Today their company is one of the country's leading concerns in this field.

Fibercast has but recently emerged from the laboratory stage after two years of extensive development work. For its production a half-million dollar plant has been erected on an 18-acre site in Sand Springs, ten miles west of Tulsa. The Perraults designed and engineered the manufacture of all the equipment. Dr. J. D. Robinson is manager of the Fibercast Division plant.

Fibercast is made, under patent, of two polyester resins which are solutions of modified glycol maleates dissolved in styrene. One of the resins is a clear glass-like brittle material in its cured state, and the other is a flexible rubber-like material. The two are blended together to get the most desirable properties for end use. To this mixture are added a catalyst and a dye to give color for coding the various grades of pipe which are now available in two sizes, 3½ inches and 4½ inches O.D. Colors vary from reddish and yellowish browns to greens. The product is very hard, with a high density rating. Hardness is tested by Barcol (Barber-Coleman) instruments whose units are converted to Rockwell units (empirical factors).

For reinforcement, continuous strands of glass fibers are incorporated into the Fibercast by wrapping them on a mandril, in alternating layers, so that 50 percent of them run lengthwise to provide tensile strength for existing endloading and beam strength, and the other 50 percent are wrapped around the pipe to give the required burst resistance pressures. The glass cylinder is then placed in a cylindrical mold which is spun rapidly while the blended resin solution is sprayed onto it. The centrifugal force creates a solid glass-smooth exterior and interior as the fibers are completely covered. Six of these pieces of tubing are then cured at once by heat from gas flames in a huge oven. Curing time is about 30 minutes, though the resins themselves will cure in about three minutes.

Both pipe and tubing are made in three wall thicknesses. Pipe is available in operating pressures of 100 and 200 psi. Tubing is available in 300 psi internal and 500 psi external pressures. Weights vary from 17 pounds per 20-foot length of 100-pound 3-inch line pipe to 50-pounds for 4½-inch tubing.

The price per foot of Fibercast is more than steel pipe of comparable size, but the total price of a completely installed job is comparable to that of steel on account of the savings in freight and in handling costs and labor.

Currently the plant is producing 1,200 feet per day on an 8-hour basis, and since January this year, when it went into commercial production, it has turned out 100,000 feet of product. Plans are being made to increase production on a 24-hour basis with a potential of about 180,000 feet per month.

Some of the advantages claimed for Fibercast by its manufacturers are: chemical inertness to most all common corrosive materials such as soil, alkali and acids, sulfur and salt-laden fluids, oil and oil products, water and gas. This results

Unhooking links from elevator holding Fibercast tubing prior to stabbing in next joint. Second elevator just behind the first will lower next section when it is screwed in.

in long life as compared with steel and other types of pipe. It is extremely light in weight, being only one-fifth the weight of steel and cast iron, one half the weight of aluminum, and one-third that of transite. It will realize savings for the user through lower replacement costs, lower freight costs, including the saving of all costs of protective coatings of corrosive pipes. Raw materials are in ample supply and not subject to shortages such as sometimes prevail in ferrous and other metal pipes. Mill price can be competitive with low-carbon steel pipe and with cast iron, transite, aluminum and other metal pipes in the same sizes. It can be made near the market where used at no increase in cost. It can be made in standard forms and sizes, can be used with other pipes and standard fittings without having to introduce serious changes in procedure. It can be joined by screw threads, flanged joints, grooved joints, cemented joints, plain end couplings, and many standard fittings. It has great weight to strength ratio in comparison with steel and all other tested pipe materials.

It can be made in many variations to suit the end use requirements, resulting in variations of strength, wall-thickness, flexibility, jointing and costs. It can be colored for coding of different operating pressures, or it can be made translucent for food industry use. It can be bent with pressure around corners or curves to a certain extent, but when pressure is removed, it will return to its original form.

According to its originators, Fibercast is adapted to many uses outside the oil industry such as applications where low heat transfer quality of pipe is an advantage for the transmission of refrigerated or heated fluids, or where consideration of abrasive action is paramount, such as in grain or gravel handling.

Several oil companies are using Fibercast line pipe in various oilfield uses, mainly in disposal systems in Kansas, Oklahoma, Texas, and Louisiana, but it remained for Superior Oil Co. to pioneer the use of Fibercast plastic pipe in a deep well.

Center, above, applying special graphite base lubricant to threads on inside of collared joint. Note friction type wrench used with Fibercast. Left, stabbing in a joint of plastic tubing by hand until threads are half way in. Tubing can be steadied with one hand by man on monkey board because of its lightness.

MATERIALS POLICY COMMISSION SUPPORTS PRIVATE MANAGEMENT OF OIL

By Joseph Huttlinger

UNUSUAL IMPORTANCE attaches to the recent report of the Materials Policy Commission. Its chief significance, however, lies in the fact that the Commission, initiated by the government but not dominated by government officials, after 18 months of study offers no indorsement of proposals to extend federal authority over the petroleum and natural gas industries.

The Commission was asked to suggest steps to assure adequate oil for the free world and replied, in short, that the industry is doing the job competently and will continue doing it if left free of crippling government restrictions. The study was started by government, but turns out to approve industry, something unique after two decades of constant agitation for extensions of government control and for curbing private initiative.

Here are some of the highlights relating particularly to matters of policy, from the massive document, perhaps the most important oil report from government in a decade:

Taxes: The depletion allowance, number one encouragement to the continued development of the petroleum industry in America, should be retained as an "inducement to risk capital." Further, "perennial tampering" with or "radical alteration" of the allowance or its present rate of 27.5 percent should be avoided. The United States should give tax adjustment for foreign oil operations and help guarantee against expropriation.

Prices: The trend is upward, but imports of crude oil and products and the imminence of the synthetic petroleum industry, using coal and oil shale, promise to set ceilings on prices. The prices a quarter century off may be 25 to 30 percent higher than today relative to the nation's general price level.

Crude Output: United States production of crude oil is hard to forecast, says the report, giving three estimates of the 1975 outlook. The lowest is five million barrels daily, the highest 10 million, compared with today's production of over six million barrels daily.

Reserves: An "emergency cushion" of oil producing, refining and transportation capacity is needed against the requirements of an emergency. Best way to get this is to produce less than today's seven percent of reserves each year. The offshore lands, on the threshold of development, constitute an ideal area for creating an "underground stockpile."

Tariffs: "In view of its future needs and limited resources," says the report, "this nation should welcome crude oil imports, not place obstacles in their way. Tariffs on crude oil imports should therefore be held down, reduced or eliminated, within the limits imposed by national security considerations."

Synthetic Oil: A huge coal-to-oil industry is still "uneconomic," but the government should give "limited financial assistance" to companies for the production of oil from shale and keep studying coal-to-oil processes.

Conservation: The oil and automobile industries can help save oil by private action towards unit operation of oil fields on the one hand, and more automatic transmissions and less emphasis on high octane gasoline on the other.

Demand: Over the free world, total demand is expected to advance from 9,940,000 barrels daily in 1950 to 26,800,000 barrels daily by 1975. The United States demand of 6,450,000 barrels daily in 1950 is expected to climb to 13,700,000 barrels daily in a quarter century.

Production: To meet demand, the free world production is foreseen as climbing from 10,500,000 barrels daily to 26,800,000 barrels daily over the 25-year period. The United States production was 5,910,000 barrels daily in 1950, and is seen as reaching 11,200,000 at the end of the period. A million barrels daily or more of this will come from synthetic production.

Imports: A five-fold increase in oil imports to the United States is foreseen over the period, going from 540,000 to 2,500,000 barrels daily. This is after synthetic oil production meets some domestic demands. Imports could rise higher, the report indicates, assuming domestic crude oil output is less than 10 million barrels daily.

Natural Gas: A steady growth in demand, against limited reserves, is foreseen. To make the best use of gas, government and industry are asked to emphasize "high advantage" users, as against industrial users, to take steps for conservation in the gas fields, and to encourage gas pipeline projects designed to serve high advantage users. A difference between oil and gas is that for gas, there is little supplemental supply from imports or synthetics.

The members of the President's Materials Policy Commission, were:

William S. Paley, chairman of the board of the Columbia Broadcasting System and chairman of the commission; George Rufus Brown, president, Brown Engineering Corp., vice-president of Brown and Root, and chairman of the board of the Texas Eastern Transmission Corp.; Arthur H. Bunker, president and director of Climax Molybdenum Co.; Eric Hodgins, member of the board of editors of Fortune magazine and author of technical books; and Dr. Edward S. Mason, dean of the graduate school of public administration, Harvard University.

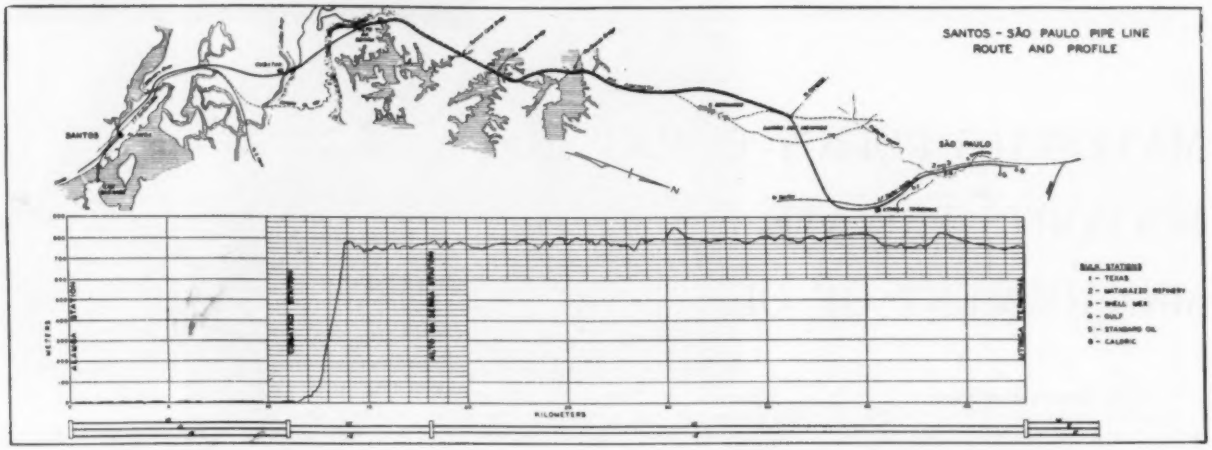
A special eight-page section of the report points with approval to "an almost classic example" of cooperation in oil between industry and government overseas with benefits to both parties and to the free world. In the partnership, American oil companies have invested more than $2.5 billion in Venezuela, more than in any country except Canada. In return, the free world's oil supply has mounted sharply against the demands of war or peace, so that today Venezuela can boast of 1,800,000 barrels daily of production.

As for Venezuela's gain, the report says, "it has achieved a balanced budget with oil revenue supplying 60 percent of the income; a favorable balance of trade with oil supplying over 90 percent of the foreign exchange; a low income tax rate; enormous foreign trade; rapid industrial growth and broad national development and social benefits.

"The Venezuelan people and their government have made wise and far-seeing use of their mounting income from oil," says the report. About $100 million has gone into agriculture; $21 million into a giant pier at the chief port; $45 million into a highway to Caracas, the capital; into public housing; and the budget gives $43 million to education and $42 million for public health.

In contrast, says the report, many oil producing nations show "little perceptible

(Please turn to page 68)



Santos-Sao Paulo Pipe Line Will Aid Brazilian Transport

By Manuel da Silva*

BRAZIL'S heavily overtaxed transportation system will have one important load taken from its back when the new Santos-Sao Paulo pipe line is inaugurated in a few weeks.

No part of the Republic's vast communications network is so overworked as the Santos to Jundiai Railway (Estrada de Ferro Santos a Jundiai) which carries traffic from the Atlantic seaport, Santos, to Sao Paulo, Brazil's second largest city and the greatest industrial metropolis of all South America.

In 1950, movement of freight along the railroad reached a peak of six million metric tons. Nineteen percent, or 1,160,872 tons, consisted of petroleum and petroleum products, exceeding both coffee and cotton, two of Brazil's major products.

Of Brazil's oil imports, more than three and a half million metric tons, some 48 percent of the total, passed through the port of Santos enroute to Sao Paulo and the hinterland in 1949.

Renato Azvedo, the young and capable engineer-president of the E.F.S. and J., was one of the first to recognize the difficult transportation problem and to initiate the idea of the pipe line. And when the decision to build the line was made by the Conselho Nacional do Petroleo, the Brazilian government corporation charged with oil exploration as well as petroleum import controls, it was Azvedo to whom was given the responsibility for Brazil's first pipe line.

With the completion of the line, a fleet of 400 tank-cars now operating from Santos to Sao Paulo will be free for use elsewhere in the country.

Backers of the pipe line envisage not only pumping crude oil from Santos docks to markets in Sao Paulo, but also pumping crude oil to and refined petroleum products from the Cubatao refinery now being built near Santos.

One of the chief reasons for building the pipe line was to unburden the E.F.S. and J. Looking ahead, Azvedo and other officials hope to see the Santos-Sao Paulo line connect with other Brazilian railroads and one day serve as a link in a rail network reaching to South America's west coast.

Out of exhaustive consultations between a Brazilian commission of engineers, the Conselho Nacional do Petroleo and William G. Heltzel, North American pipe line consultant, the Heltzel Report of 1948 was produced. This report examined the project from every aspect: cost, technical difficulties to be overcome, and capacity.

Not the least of these considerations was the extraordinary development of the city and state of Sao Paulo and the calculation of future demands on the pipe line's capacity.

The daily consumption of the city was calculated at about 20,000 barrels, i.e., 3,180 tons of gasoline, diesel oil, kerosine, solvents, heavy and light lubricating oils, and other fuel oils. Beyond this figure, the report abandoned the idea of making an exact evaluation of Sao Paulo's demands, but rather depended upon general principles.

In addition, there were other factors to consider. Brazil is seriously lacking in fuels. Firewood is rapidly becoming impossible to obtain near the large cities. It is so scarce that its cost is now reckoned at three times the equivalent amount of fuel oil. Coal, found only in the southern part of the country, is of poor quality. The hydroelectric plant at Cubatao, which supplies the city and a large part of the state of Sao Paulo, is nearing the limit of its capacity.

Another source of fuel, artificial gas made from coal, is expensive due to the long haul it must undergo to reach the fabricating plants.

Motor transport in Sao Paulo, Rio de Janeiro and Brazil's other large cities is increasing rapidly, especially through the growing construction of all-weather roads like the new highway from Rio to Sao Paulo. In the one year 1945-46, gasoline consumption in Sao Paulo climbed 84 percent and fuel oils 33 percent.

Based upon fifty years of experience in the U.S.A., the Commisao Interestadual de Comercio set 20 years as a good "life expectancy" for the Santos-Sao Paulo pipe line, and pointed out that proper periodic renovation of the pipe line and the use of improved models in pumping equipment as they are devised is more important in the life of a pipe line than the actual wear and tear on the line itself.

On the basis of this facet of the report, 70 percent of the capital of the $8 million pipe line enterprise has been invested in obtaining the latest types of equipment, and pumping equipment has been made interchangeable so that it may be refitted at any time. A large part of this pumping equipment has been supplied by Worthington do Brasil, S.A., of Rio de Janeiro.

(Please turn to page 68)

*Chief, Brazil Bureau, Globe Press Assn.

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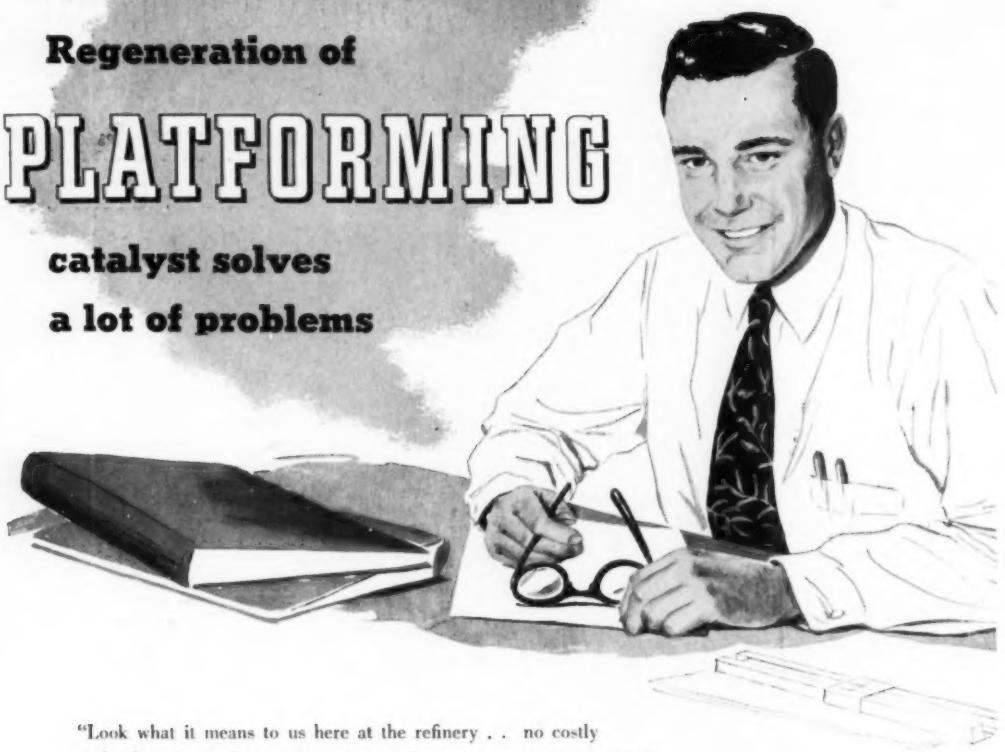

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BRAZIL'S

pending petroleum law establishes national operating company

By R. G. Walker

WITH PASSAGE of the petroleum bill representing the views of President Vargas virtually assured, the President has sent to the Brazilian Congress a message requesting an increase in the funds appropriated for the work of the National Petroleum Council. Under the pending bill the Council will continue in control of all operations relating to oil exploration, production, and transportation. During the past three years, the annual expenditure of the Council has averaged $8,250,000, which is considered totally inadequate for the work that needs to be done.

To expand the program now under way and to continue it without interruption, the government asks Congress to authorize the Council to draw at once on this year's allotment of $44,279,000 U.S. of which approximately one-half will be expended on exploration and development in eleven sedimentary areas. The total appropriation provided by the petroleum bill is $58,760,000, or roundly seven times the amount heretofore devoted to this purpose.

The message also asks for credits to accelerate work on the Cubatao refinery during the remainder of 1952, to acquire plant for the manufacture of nitrogenous fertilizers and to complete the enlargement of the Mataripe refinery this year. The bill sets aside U.S. $12,100,000 for a new unit at Mataripe to process an additional 10,000 barrels per day and to provide for the production of lubricating oils.

An additional appropriation of U.S. $11 million is asked immediately to meet commitments for the mining of bituminous schists and installing plant to process 10,000 barrels of shale oil daily. The bill provides U.S. $14,415,000 for this work in 1953. These supplementary credits would be drawn upon only when the petroleum bill becomes law.

The sums to be spent now on prospecting and drilling, in millions of U.S. dollars, will be distributed over the 11 sedimentary areas as follows: Amazon Basin, 4.0; Maranham and Piaui, 3.6; Rio Grande do Norte, 0.6; Alagoas, 1.3; Sergipe, 0.1; Bahia, 7.4; Sao Paulo, 3.2; Parana, 0.8; Santa Catarina, 0.1; and Rio Grande do Sul, 0.4. The work to be done includes geological and geophysical investigations, aeromagnetic surveys and drilling.

Referring to the President's message, the head of the Petroleum Council states that extensive work will be carried out in Bahia during the next 18 months. Two new wells have been drilled, one in the recently discovered Pedras field and another in that of Candeias, the principal source of supply for the Mataripe refinery. Drilling has begun in the Pojuca district, which is expected to prove another oil field, and 150 additional wells, making 200 in all, are to be opened in the Dom Joao area. Drilling will be speeded up in other oil fields and preparations are being made to raise the capacity of the Mataripe refinery to 15,000 barrels daily.

Pending the distribution of federal funds, the governor of Parana has asked the state legislative assembly for U.S. $550,000 to install a pilot plant, with capacity for 100 tons of crude to be extracted from the bituminous schists in Parana. The deposits in that state extend for 252 miles from north to south.

The pending bill provides for the incorporation of a share company to be designated as Petroleo Brasileiro S.A. to carry out projects conforming to plans approved by the National Petroleum Council. The society's initial capital will be 4,000 million cruzeiros ($218,400,000). By 1956 the capital will be raised to 10,000 million cruzeiros ($540,000,000). The union will receive control of the petroleum resources of the country and it may issue preferential shares which may be offered to public subscription. The national treasury is authorized to make advances against receipts from taxes to complete the company's capital to the extent of 1,500 million cruzeiros ($81,900,000 U.S.). A certain proportion of the shares may be transferred to the various states and municipalities, but not sufficient to reduce the holdings of the union below 51 percent.

Proceeds of importation and consumption taxes on motor vehicles and of the tax on remittances abroad in payment for such vehicles and accessories are to be applied toward the society's capital. Owners of motor vehicles will contribute until 1956 in specified amounts and will receive certificates convertible into shares of the company. Authority is provided for the issuance of debentures up to twice the amount of the society's capital. these securities to bear five percent interest and to be redeemable in 15 years.

The company will be governed by a board of directors and an executive council of three selected by the executive authority from the board together with the president of the company who automatically becomes a member. Importations of machinery and accessories required for the purposes of the association will be exempt from duties.

The amounts payable by owners of various types of motor vehicles are specified in a table that forms part of the law. A companion piece to the bill establishing Petroleo Brasileiro S.A. provides funds for petroleum development and for the national highway program. On importations, the general rates on principal petroleum products are as follows:

RATES PER TON

Product	Cruzeiros	U. S. Equivalent
LPG	1,250.0	$67.50
Gasoline	1,670.0	90.18
Kerosine	467.7	25.25
Gas Oil	175.0	9.45
Diesel Oil	175.0	9.45
Fuel Oil	118.7	6.41
Lubricating Oil	1,500.0	81.00

On products derived from domestic crude only nominal taxes are imposed. The bill provides that receipts from these taxes are to be apportioned 75 percent to the national highway fund and 25 percent to undertakings connected with the petroleum industry according to the terms of the petroleum law. Other sections of the bill relate to the detailed disposition of the funds collected.

President Vargas has signed a decree reserving to the Union, as petroliferous areas, two sedimentary zones in the states of Sao Paulo and Parana. No concessions for prospecting will be granted within these areas, which include the towns of Jacarezinho, Ribeirao Claro, Bofete, Porangaba, Guarei and Morro Alto.

The Porangaba-Guarei area is just off a main road to Sao Paulo and lies west-northwest of the capital, about midway between the latter and the Parana border at Ourinhos. Jacarezinho is across the Parana border, on the railway, about 20 miles south of Ourinhos.

The National Petroleum Council has been systematically investigating these areas since 1946. Two anticlinals were marked out near Jacarezinho in 1949 and reliable indications of petroleum were verified in the following year. Four crews, each consisting of seven Brazilian and two American geologists, are now at work, and it is hoped to drill at least three wells in 1953, one in S. Paulo and two near Jacarezinho. The official statement refers to these areas as among the most promising oil and natural gas zones discovered to date.

Daily production of the Mataripe refinery in Bahia now amounts to 2,160 barrels, of which 80 percent consists of motor gasoline and fuel oil. The Petroleum Council is considering the production of solvents for industrial use at Mataripe.

Distribution of alcohol to importers of petroleum products was resumed in June by the Brazilian Sugar Institute. The alcohol is to be mixed with gasoline in the proportion of five percent.

Pipeline approach and new discoveries stir interest in

BRITISH COLUMBIA

By Don Tyrell

PIPELINE OIL and natural gas became closer to reality in July as bulldozers and loggers scarred the face of the British Columbia countryside preparing the route for the Trans Mountain oil pipeline from Edmonton to Vancouver and Westcoast Transmission advanced its plans for a natural gas pipeline from Alberta to the Pacific Coast with hearings in Ottawa and Washington.

Trans Mountain's pipeline preparations are visible throughout British Columbia as the right of way winds through the hilly interior of the province, snaking its way past country roads and highways. Trench has been dug and line laid beyond Kamloops as the pipe inches its way to the Pacific Coast where tank farm and refinery capacity are being prepared for its expected arrival and opening in August 1953.

Shortage of steel caused by the United States steel strike has not yet delayed the operation, as enough pipe was on hand at the Mannix Ltd. spread near Kamloops and the two Comstock Midwestern spreads at Jasper and Edmonton to keep the line moving westward until the end of this month. The line is using 5,000 carloads of pipe shipped from San Francisco and Milwaukee.

Pipeliners from Iraq to Texas are playing a part in the biggest single operation to battle the rugged British Columbia and Alberta mountains since the railroads first pushed their steel westward. Miles of rock blasting, 21 navigable rivers to cross, hot arid stretches as scorching and dry as Oklahoma and Texas, virgin forests and settled farm country all have to be crossed before the line reaches its terminus in suburban Burnaby on the south shore of Burrard Inlet. More than 1,000 men are working on the line.

Action of the federal government at Ottawa to hasten dredging of the Vancouver harbor entrance to accommodate the large tankers expected with completion of the pipeline has been welcomed in Vancouver as the company planned to locate its marine terminal outside the harbor if facilities could not be arranged to handle large vessels.

Trans Mountain has bought an additional 3½ acres of waterfront on Burrard Inlet adjoining the McColl Frontenac property at Barnet and will build dock and other facilities to handle 100,000 barrels daily.

Pacific Coast outlook points to a heavy demand for the pipeline oil, especially in view of the fact that California, main supplier of crude oil to British Columbia for years, is now importing oil. In July, a 28,000 ton tanker took 240,000 barrels from the Mina field in Sumatra into San Francisco.

In the meantime the Board of Transport Commissioners in Ottawa has deferred granting a charter for an Alberta-British Columbia natural gas pipeline to Westcoast Transmission Co. until it has made its own investigation of natural gas reserves in the Peace River area. However, the board stressed that "in principle, it looks with favor on the application of Westcoast Transmission Company." It also stated that if the board decides the reserves are sufficient, Westcoast will be given permission to construct the gas line. That leaves the Federal Power Commission at Washington the last hurdle for West Coast to overcome. No decision is expected from the commission until the fall.

Drillers in the Fort St. John area of northeastern British Columbia continue to boost natural gas reserves as additional finds are made. Tests at Fort St. John No. 7 of Pacific Petroleums indicate it is one of the largest gassers found in the north. Acidization of two comparatively thin zones from 3,687 to 3,725 feet boosted the gas flow from 1,300,000 feet a day on first drillstem tests to a flow rated at 11,000,000 feet. Tests were in the upper part of the Triassic formation. Main part of the zone, with about 30 feet of gas area, gave more than 4,500,000 feet a day in drillstem tests without acidization. The zone will be tested further and is expected to yield more gas after perforation and acidization. No. 7 is a few miles north of the discovery well where oil was first found last November.

Latest well added to the Fort St. John area, Pacific Fort St. John No. 8, struck a large flow of natural gas and found light crude oil during a drillstem test in the Triassic. Oil and gas were found in a section that had not yielded commercially in other wells in this area.

It is about two miles south of No. 5 which found some gas in the Triassic. No. 8 ran a drillstem test about 600 feet below the top of the Triassic, from 4,493 to 4,503 feet. Gas flowed to the surface in about a minute at 10,000,000 feet daily. Oil sprayed to the surface in about three minutes. Pipe was pulled and found to hold 1,380 feet of clean oil with estimated gravity of 40 degrees API. There was no sign of formation water. Triassic section in No. 8 is about 400 feet above the zone that gave natural gas and naphtha in other wells in the area.

New British Dominion Oil Co. has joined with Pacific Petroleums and is drilling beyond 1,067 feet on Pacific-Peace River-British Dominion No. 1. This well is about 10 miles south of Fort St. John. After the well has been carried to the permo-Pennsylvanian, the drilling rig will be moved four miles east to deepen Peace River Gas Company's No. 8 well to the Mississippian formation.

Dr. T. B. Williams, provincial oil and natural gas controller in Victoria, has announced that with all available land in the Peace River and southeastern British Columbia areas covered by permits, interest is now shifting to the lower mainland region, Quesnel and Francois Lake. Plans are also being made to speed development of oil and gas exploration in the Lone Mountain area. A road is being built into the area from Beaverlodge according to an announcement by George A. Richardson, president of Wilrich Petroleums. The company planned to spud in a well late in July.

Most northerly oil drilling venture in British Columbia was scheduled for July 15 when Liard No. 1 was spudded in near the junction of the Liard and Toad rivers. Equipment and supplies were moved in from Fort Nelson down the Nelson River to the Liard and from the Liard upstream to its junction with the Toad where a well site was selected. Companies interested in the 1,400,000 acres in the district are Calvan, Del Rio, Central Leduc and Charter.

In the southeastern section of the province, Royalite and Shell have made geological surveys in the Flathead valley area.

First settlement in oil company wage negotiations in the Vancouver area was made by Shell Oil with a $19 monthly pay boost to 50 employees of the firm's marketing plant. Increase goes to truck drivers, maintenance and garage mechanics, mechanics' helpers and bargemen. Night workers get a seven cent bonus for afternoon work and 14 cents for night shift.

Negotiations are still in progress between 175 workers at the Shellburn refinery and other oil companies are in process of negotiating new contracts. Two hundred and fifty Imperial Oil Ioco refinery workers voted in favor of strike action, but set no strike date.

Shell marketing division wages under the new contract are now $310 for truck drivers, $335 for mechanics, $285 for mechanics' helpers, and $309 for bargemen.

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The ruins of Venezuela's first refinery (ca. 1880) and surface connections of one of the wells in the original Venezuela field, La Petrolia, are in left background and right foreground, respectively. The group of geologists pictured visiting the scene in 1948 proved by working the pump handle visible under the corner of the iron roof in right foreground that it was still possible to extract oil from this 70-year old well.

VENEZUELA'S "OIL CREEK" BIRTH OF AN INDUSTRY

By Neal Van Middlesworth

WHEN in early May the Shell-Caribbean Petroleum Company spudded in wildcat Burgua-1 in the Andean mountain state of Tachira, the Venezuelan oil industry had returned to within 30 miles of where it was born 70 years ago. This original Venezuelan field, the granddaddy of them all, was the only field in that country for upwards of 35 years, and it dragged on a puny existence for another 15 years after that, while its more robust descendants sprang up and flourished in the Maracaibo basin, 200 miles and more away.

The industry in Venezuela is commonly thought of as having started in 1914, when Shell discovered the Mene Grande field on the east side of Lake Maracaibo, or in 1922, when Santa Rosa Los Barrosos-2 blew out at a 100,000 b/d rate, but it is a fact, though little known, that the first formally constituted company began operations on the first formally authorized concession in Venezuela back in 1878.

In that year, Dr. Carlos Gonzalez Bona discovered surface seeps on lands belonging to Don Manuel Antonio Pulido Rubio, five miles from the town of Rubio. An enthusiastic young friend, 24-year-old Pedro Rafael Rincones, who had read of Colonel Drake's epochal discovery at Oil Creek, recognized the substance as oil. Fired by the potential significance of the find, he persuaded General Jose Antonio Baldo, who was a cousin of the proprietor of the land and who happened to be contemplating a muleback journey to the then far-distant capital city of Caracas, to solicit from the Government a concession of 100 hectares (250 acres) with a working life of 50 years.

Work had already begun on the strength of an authorization obtained from the Great State of the Andes, as the general area was then called, but in 1882 a new title was secured from the federal authorities, and the Compania Nacional Minera Petrolia del Tachira was formed on August 1, 1882, with a capital of 100,000 Bolivares, or about $30,000 in present-day terms. The founders were Dr. Carlos Gonzalez, General Jose Antonio Baldo, Manuel Antonio Pulido, Jose Gregorio Villafane, General Rafael Antonio Rincones, and Pedro Rafael Rincones.

Almost the first move of the promoters, even before their formal organization, had been to send Pedro Rincones to Oil Creek to study the infant industry on its home grounds. Returning in 1879 after a year in the United States, young Pedro brought with him, besides his technical lore, the elements of a drilling outfit and of a "tea-pot" still. This equipment, heavy for those times, traveled with him on a sailing vessel through Lake Maracaibo to Encontrados, then as now almost the only port of entry to the Andean region of Venezuela. From Encontrados he and his precious cargo transferred to muleback. This last stage of the journey took several arduous days before "La Alquitrana," as the "field" was called, could be reached.

The first well drilled reached a total depth of 175 feet and was given the name Eureka. Number two went to 80 feet only, but the third well, El Salvador, was carried all the way to 274 feet before the tools were stuck irretrievably. (Creole's Alturitas-1 was carried below 17,000 feet in 1951.) The difficulties in the way of doing any drilling at all, considering the primitive nature of the tools, the inexperience of the operators, and the utter impossibility of securing replacement parts in that day and age at that distance, can well be imagined.

Nevertheless, the company carried on until the year 1928, the year of the expiration of its concession, bailing out its three holes every two or three days. The yield was then run through the "refinery" and the resulting product, kerosine, was sold in the nearby towns of Rubio, San Cristobal, Tariba, and even as far away as Cucuta, twenty miles over the border in Colombia. (The minute quantities that reached Cucuta were the forerunners of the international trade in petroleum which today is second only to that of the United States.)

A picturesque sidelight on the local use of this first commercially exploited hydrocarbon in Venezuela is that in 1883, on the centenary of the birth in Venezuela of the hero of South American independence, Simon Bolivar, the main plaza and the facade of the church of San Cristobal, capital of the state, were illuminated by the kerosine of La Alquitrana. The lamps were made by cutting oranges into halves, supplying a wick, and filling with kerosine, after which these improvised lanterns were suspended from trees or convenient places in the masonry.

Existing data on this first Venezuelan oil operation are lamentably scarce. It is known, however, that an American driller named Brown married into the family of one of the original syndicate about 1928, when the original concession expired and, with a Fort Worth Spudder, drilled nine or ten more shallow holes which kept the enterprise going until about 1931 or 1932. It is a matter of record, too, that Shell drilled a wildcat called Alquitrana-1 on this property to a depth of 3,701 feet in 1937, and abandoned it as a dry hole.

Pedro Rafael Rincones, the sparkplug in the affairs of the first Venezuelan oilfield, went on to become Venezuela's Consul in New York from 1903 to 1905 and from 1911 to 1927.

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BRITISH OIL NEWS

By E. Lawson Lomax

For the moment, developments in the Iranian oil muddle appear to be at a standstill pending decision of the International Court of Justice as to its competence to handle the complaint of the British Foreign Office against the Iranian government and final outcome of the seizure of the tanker "Mary Rose" at Aden. Following the preliminary hearing at The Hague, Dr. Mossadeq returned to Teheran and the Court has adjourned to consider its verdict. The "Mary Rose," with its cargo of Persian oil under charter to M. Rizzi of Medemar, Genoa, is still under detention by order of the Aden court, though various rumors have been in circulation as to the possible disposition of both ship and cargo.

Middle East Production Rising

The output of Mid-East oil continues to increase. Production from the Kirkuk field in May reached 345,000 b/d, barely two months after the initial commissioning of the 30-inch Kirkuk-Banias line, the May figure being double last January's total and equal to an annual rate of over 16 million tons. There is every prospect, therefore, that this production will attain its projected quantity of 22 million tons per year within the specified time.

Basrah Petroleum Co.'s production from its Zubair field in southern Iraq in May was 214,743 tons (52,000 b/d) compared with 144,261 tons (35,000 b/d) in April. The production from this field is at present carried through a single 12-inch pipeline to Fao, the tanker loading port, and full projected production cannot be attained until the completion of the new 24-inch pipeline between the same terminals, which has now been ordered.

British Tanker Completions

Additions to the British tanker fleet continue to be made in fulfillment of company building programs.

The four 28,000-ton tankers built to the order of the Shell Petroleum Co., Ltd. have now been completed and put into commission, the last one, the "Velletia" having left the Tyne on her maiden voyage in the first week of May.

Of the six tankers of the same capacity built for the British Tanker Co., subsidiary of the Anglo-Iranian Oil Co., four are now in commission and the other two, the "British Crown" and "British Shell" had their trial runs early in June. For the same company the keels of four out of a projected six 32,000-ton tankers have been laid.

National Benzole Co., Ltd. announces the launching of the M. V. "Ben Harold Smith," by Mrs. Smith, the wife of Col. H. C. Smith, a director of National Benzole Co. This tanker was built at the yard of the Rowhedge Ironworks Co., Ltd. and is designed for coastwise service.

Personnel

Leslie Roberts, C.B.E., chairman and managing director of Manchester Ship Canal Co., received a Knighthood in the last Birthday Honors list. He was awarded the C.B.E. in the Birthday Honors list in 1942. Under the direction of Sir Leslie, the Manchester Ship Canal Co. is constructing a new dock at Eastham, the entrance of the Ship Canal, especially for the accommodation of the new super-tankers bringing crude oil for processing in the refineries in the north of England.

C. C. Wakefield & Co. Ltd. announces the following appointments: Arnold Watson, general manager of Castrol sales for the past four years, has been appointed to the board of the company. He joined the firm in 1929. J. G. Bean, formerly manager of the Stanlow installations, has been made chief production engineer for the entire Wakefield group of companies. J. C. Cragg becomes manager of Stanlow, and R. G. Pilsbury, assistant manager.

Among awards made to members of the petroleum industry recently announced in the Queen's Birthday Honors list was that of Officer of the Order of the British Empire to George Noble, manager of the Esso Refinery, Fawley, the largest refinery in Europe.

Dr. Kind and Dr. Tugendhat have resigned as managing directors of Petrochemicals, Ltd. Dr. Kind remains on the board of directors, but Dr. Tugendhat resigned from the board on June 30. Godfrey H. Owtram has joined the board of the company and has been appointed managing director.

High Speed Clamp To Shorten Tanker Turn-About

A new pipe clamp for coupling loading and discharge lines to the pumping system of oil tankers has been tested and will shortly be adopted as standard equipment on many Shell tankers.

Devised by John Lamb, head of Shell's marine development and research department, the new clamp enables the blank flange to be removed and the flexible shore line to be connected to the loading and discharge lines aboard the tanker in about 2½ minutes, as against 30 to 60 minutes for the connections at present used.

The new clamp consists of two parts, one section comprising a hinged adjustable collar immediately behind the flange on the flexible shore line. The other portion consists of a short length of mild steel piping permanently bolted to the end of the intake or discharge line on the tanker. On this pipe are four hinged arms, easily operated by hand. These hold the shore-to-ship lines in position and replace the present system of bolts and nuts and bolted clamps. As an added safety precaution and to ensure a perfect connection, two guide arms 120° apart project from the underside of the fitting and once the short pipe is resting on these arms, it is virtually impossible to make a faulty connection.

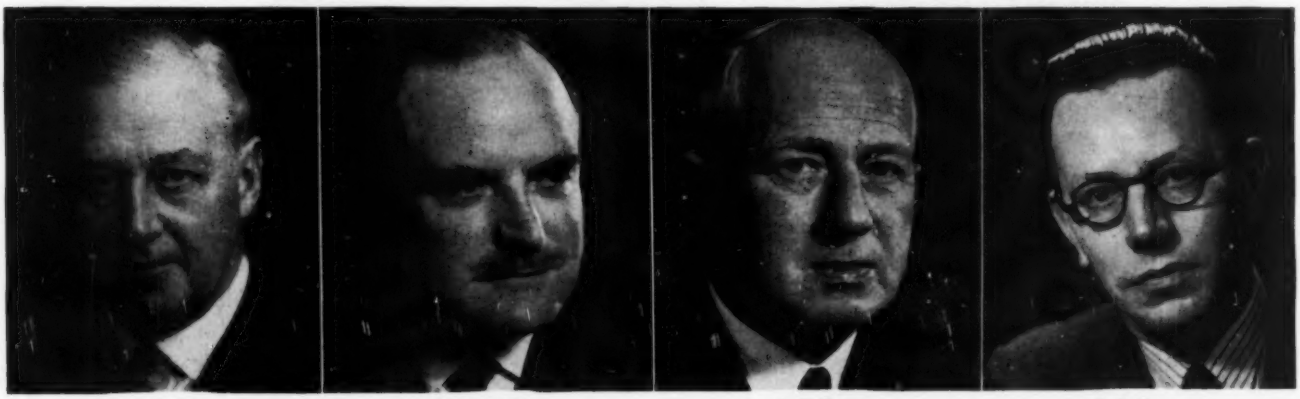
A demonstration of the new clamp was carried out on board the "Velutina" and the device will be tested again when the tanker loads at Mina-el-Ahmadi, Kuwait. The next time the "Velutina" docks in the U.K., adaptors will be fitted so that the new device may be used for either American or British standard pipes. It is expected that the new equipment will have considerable use in the oil industry.

Anglo-Iranian Orders More Tankers

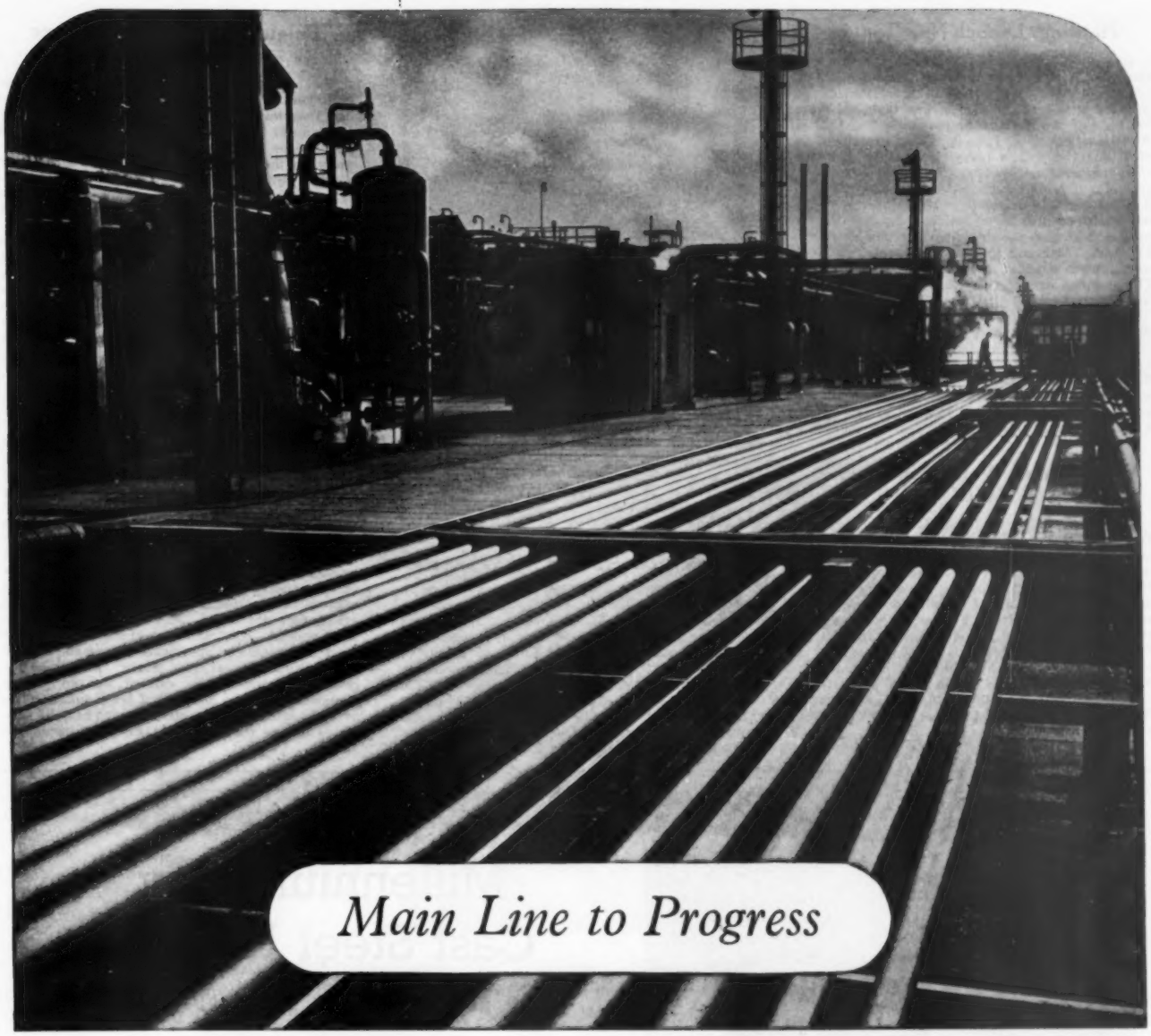
The Anglo-Iranian Oil Co., through its subsidiary the British Tanker Co., has placed orders for a further seven large tankers of 32,000 dwt each. The total cost of the orders is over £12,000,000 and is in addition to the 21 tankers which are already being built or on order, including six other tankers of 32,000 dwt.

The building program, when complete, will raise the British Tanker Co.'s fleet to 183 ships. Ship-building companies sharing the order are: John Brown & Co. Ltd., (two vessels); Cammell, Laird & Co.; Harland and Wolff, Ltd.; Hawthorne Leslie & Co. Ltd.; Swan Hunter & Wigham Richardson, Ltd., and Vickers Armstrong, Ltd., (one each).

The vessels are 675 feet long, 86 feet beam with 35 feet summer draft. The hulls are similar to the six vessels of the same capacity already on order, but the engines are more powerful, developing 14,000 hp. Speed will be 15½ knots.



L. Roberts *A. Watson* *J. G. Bean* *J. C. Cragg*



THE traffic on these lines is non-stop, night and day—for these are oil lines in one of the four Anglo-Iranian refineries in the United Kingdom. By 1953, these four refineries will be producing at the rate of over 200,000 barrels of petroleum products a day, which will be the largest single contribution to the United Kingdom's total refinery throughput.

Overseas, throughput in the group's eight other refineries is also being steadily and considerably increased, and plans are now progressing for the construction at Fremantle of another new refinery, which will be the largest in Australia. For new sources of this vital mineral Anglo-Iranian is prospecting in the U.K. itself, and in such varied regions as Nigeria, Sicily and Papua.

THE BP SHIELD IS THE SYMBOL OF BP THE WORLD-WIDE ORGANISATION OF

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Huntings Launch New Tanker

The tanker "Gretafield," built to the order of the Northern Petroleum Tank Steamship Co., Ltd., Newcastle-upon-Tyne, an associate of the Hunting group of companies, was launched from the yard of the Furness Shipbuilding Co., Ltd. of West Hartlepool on June 9. The "Gretafield" is of 16,300 dwt with a carrying capacity of about 15,500 tons of petroleum. Her main machinery consists of a two-cycle opposed piston marine diesel engine of the Hawthorne-Doxford type with five cylinders 670 m/m diameter by 2,320 m/m combined stroke, developing 5,500 bhp at about 112 rpm. Running at about 14 knots, the fuel consumption is about 27 tons of diesel oil per day. The engines are supplied by Messrs. R. & W. Hawthorne Leslie & Co. Ltd. of Newcastle.

The Furness Shipbuilding Co. announces that the tanker "London Majesty" has completed her sea trials and has been handed over to the owners, London & Overseas Freighters, Ltd. of London. She is a sister vessel to the "London Victory" which was delivered to the same owners in February. She has a deadweight tonnage of 18,070 and a Lloyds summer draught of 30 feet 5¾ inches.

West Africa's Waterborne "Petrol Train"

A "petrol train" in West Africa consists of eight specially designed 200-ton capacity barges, powered by the 325-ton tug "Adama," which recently made the 4,200 mile voyage from Clydesdale under her own power. The "Adama" was constructed for Shell and Socony-Vacuum Oil Co. under joint ownership by Yarrow & Co., Glasgow, and the barges by Clelands (Successors), Ltd., Wallsend, Northumberland. The "Adama" is powered by twin 425 hp Crossley Diesel engines with twin screws, operating in special tunnels designed for maximum thrust in shallow waters. Her moulded depth is 6 feet and her draft 4 feet 3 inches.

The work of the train will be to carry bulk supplies from Lokoja at the confluence of the Niger River with its tributary the Bennue River, and another 500 miles up the Bennue River which is only navigable for 2½ months in the year. By this means, deliveries of petroleum products in bulk instead of in drums will be made for the first time to the French Northern Cameroons and to certain up country points in Nigeria.

Launching of tanker "Gretafield."

Burgan Production At All-Time High

Crude oil production from the Burgan field in the Persian Gulf Shaikhdom of Kuwait reached an all time high of 3,302,538 tons (802,225 barrels daily) during the month of March, according to figures released by Gulf Oil Corp. on behalf of the Kuwait Oil Co., Ltd., of London. Production for the first quarter of 1952 amounted to 8,676,836 tons. These figures compare with 1,572,546 tons (717,320 barrels daily) for March a year ago, and with 4,697,899 tons (502,600 barrels daily) for first quarter of this yeear.

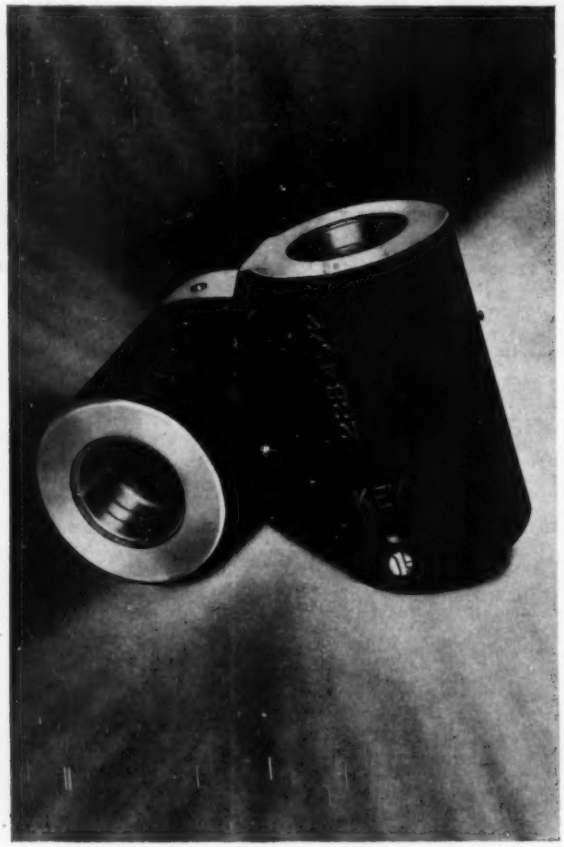
Belgian Prime Minister Opens Refinery

The new two-million-ton refinery at Antwerp, built jointly by the "Compagnie Financiere Belge des Petroles, S.A." (Petrofina) and the Anglo-Iranian Oil Co., was officially opened on June 23 by M. Jean Van Houtte, prime minister of Belgium, in the presence of several members of the Belgian government, leading industrial and political personalities, Sir Christopher Warner, British Ambassador, and Sir William Fraser, chairman of Anglo-Iranian.

The Vicomte Van der Vyvers, president of the Societe Industrielle Belge des Petroles, the joint Anglo-Belgian company formed to operate the refinery, announced at the luncheon following the opening ceremony that plans were in hand to bring the refinery capacity up to three million tons per year, and also to install a catalytic cracking unit.

New Pipeline for Basrah Petroleum

Contract for the 24-inch I.D. steel pipe required for construction of the pipeline from Zubair to Fao has ben placed with the South Durham Steel and Iron Co. Ltd. The line will be 80 miles long and will require 17,000 tons of pipe. Hitherto most of the large diameter oil pipe has been obtained in the United States and the placing of this order in Britain means a saving of some $2,250,000 besides providing the British steel industry with a new and expanding market for its products. In the manufacture of the pipe, steel plates in lengths of 26 feet are rolled, bent to shape, and then seam-welded. The carbon steel for the plates to meet the requisite specification is made in the South Durham Steel Co.'s works. Inspection for quality of welding is carried out by X-ray examination, while mechanical tests simulate the severest conditions to which the pipe may be subjected during the various stages of transport to site.



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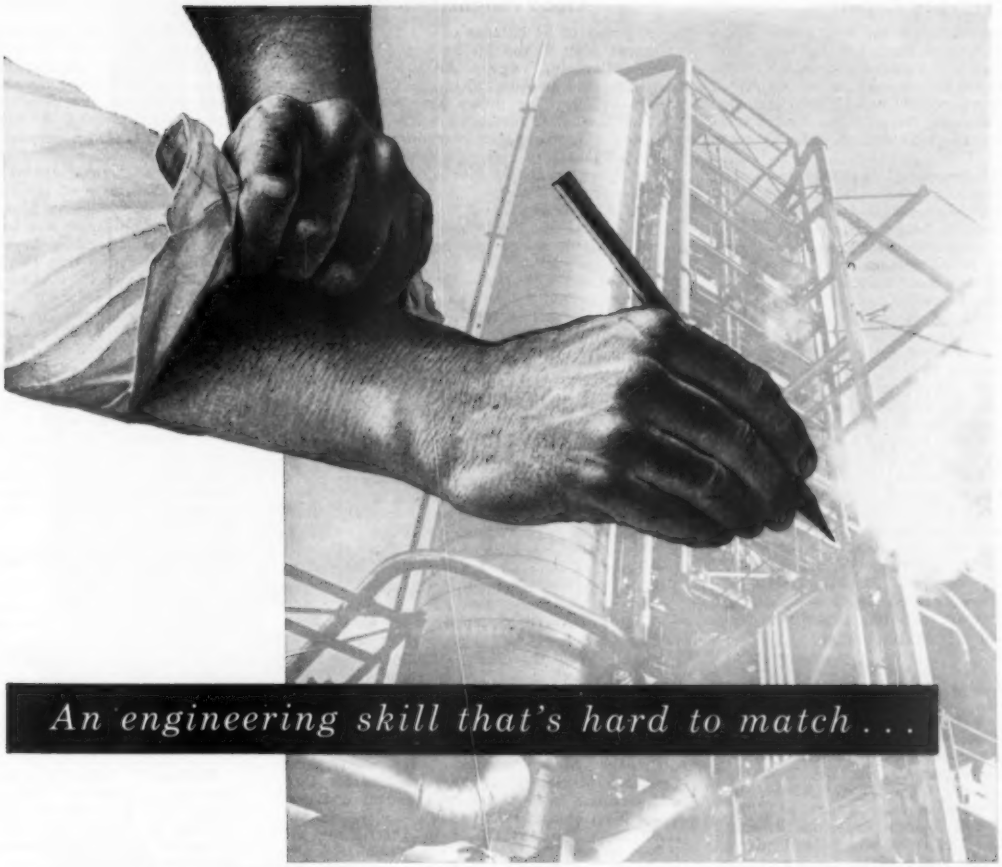

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INTERNATIONAL NEWS AND NOTES

Pantepec Report

Pantepec's net earnings for 1951, after provision for amortization, depletion and depreciation, and estimated Venezuelan income tax, amounted to $1,161,909, equivalent to 39 cents per share as compared with $1,544,894 earned in 1950. Gross revenue from crude oil sales was $7,144,034, down from $8,917,105 for the previous year.

An April 1951 decree of the Government resulted in substantially higher labor costs, and this, coupled with the cost of the unsuccessful attempt to increase El Roble production by major workovers, ran production costs and field expenses up some $670,000. Lower sales income and higher costs reduced earnings to the extent of $1,545,000, but measures taken to counteract their effect reduced the net decrease to $383,000.

As of December 31, Pantepec's gross investment in concessions covering 32,564 acres and plant and equipment in Venezuela amounted to $23,288,528. Gross production in 1951 amounted to 3,594,213 barrels, as against 4,496,237 in 1950. Under sales agreements with Sinclair Oil & Refining Co. and Trinidad Leaseholds, Ltd., 3,707,907 barrels were delivered during 1951, a decrease of 353,779 barrels from 1950. (Sales exceeded production in 1951 because of stocks carried over from 1950.) Deliveries to Sinclair were made at its Santa Barbara tank farm near the Mulata field; deliveries to Trinidad Leaseholds were made at Puerto la Cruz, Eastern Venezuela loading terminal. Shipping and selling expenses were reduced by approximately $480,000 as compared with 1950, chiefly due to economies effected in storage charges.

To Promote Indian Trade

Formation of a new corporation to engage in foreign trade between the United States and India was jointly announced today by Arie Vernes, president, Phillips Export Corp. and A. R. Palit, formerly head of the India Supply Mission in Washington. The new company, known as Phillips-Palit Corp., will operate in India through A. R. Palit & Co., Ltd., with offices in Bombay, Calcutta, New Delhi, and Madras.

This joint enterprise will concentrate its immediate activities on supplying heavy construction machinery, dump trucks, machinery and equipment for power projects, and electronic equipment and equipment for chemical and oil engineering. It will also represent a leading firm of power engineers and a top firm of chemical engineering consultants.

Pemex Gasser Completed

Temixtepec No. 1, in the field of the same name, has been completed as a 16 million cubic foot gasser, it was announced by Petroleos Mexicanos. The test was drilled 17 kilometers northwest of the Poza Rica field. Pemex drillers encountered the "El Abra" formation at approximately 5,200 feet. The equivalent formation is found at Poza Rica below 6,500 feet. Pemex is considering deeper drilling in the hope of finding oil. They expressed the opinion the new site is an extension of the Golden Lane, whose most recent southernmost producer is about 50 kilometers northwest of Temixtepec No. 1.

To Drill 100 Panuco Wells

Petroleos Mexicanos will drill 100 wells in the Panuco zone of the State of Veracruz, formerly a great producer, according to Jose Colomo, assistant technical director of the government oil agency. The program will be carried out under the terms of a contract signed recently with Wiegand Brothers, U. S. contract drillers, Mr. Colomo said.

Good Neighbor Visit

A group of 54 citizens of Fort Worth visited Caracas May 9 and 10 on the Alcoa Clipper, whose Captain, Yngvar A. Krantz, had been commissioned an Admiral in the Texas Navy for the occasion. The group bore greetings from Allen Shivers, Governor of Texas, to Commandante Guillermo Pacanins, governor of Venezuela's Federal district. They also called on Dr. Horacio Guerrero Gori, president of the municipal council of Caracas, with a message from Major J. R. Edwards of Fort Worth attesting to the ties of friendship and understanding that have "united Americans and Venezuelans in mutual appreciation."

John M. Scott, Fort Worth attorney, organized the mission and was personal representative of Governor Shivers. Mrs. Roger B. Owings extended Texas' greeting to Venezuela on behalf of the Commission.

Ansul Appoints Export Agents

With the signing of distributor agreements in Cuba and Iran, Ansul Chemical Co. of Marinette, Wis., has increased its export sales network to 32 countries.

In Cuba, Gases Comprimidos Ramallal, S.A., will handle sales of Ansul dry chemical fire equipment. The Cuban firm distributes several other products and is also a manufacturer of industrial gases. The newly-appointed Iranian distributor is the Firooz Trading Co., Saadi, Teheran. According to Ansul's export manager C. B. Beidler, the increasing industrial development of both Cuba and Iran prompted his company's decision to seek distribution of its fire equipment.

Fear Monopoly in Mexico

Creation of a "monopoly" for distributing Petroleos Mexicanos' products in Mexico City and environs is worrying independent distributors. First hint such a company is in the making came from the Association of Distributors of Petroleum and Derivatives, which published ads in the Mexico City press warning the public its members are threatened with "extinction" by formation of the proposed enterprise.

U. N. Aids Yugoslavia

Under the auspices of the United Nations, a group of experts has arrived in Yugoslavia to asssist in modernizing the petroleum industry. It is hoped that 100,000 metric tons of crude can be produced this year for refining in Yugoslav plants. Last year's production was 55,000 tons, the best record to date.

Venezuela Geophysicists Organize

Forty-three exploration geophysicists met in Caracas, Venezuela to form the "Sociedad Venezolana Geofisica" (Venezuelan Geophysical Society) on May 26. W. C. Merritt, of Creole Petroleum Co., was named chairman of the constitution committee. Other members of the committee are Dr. Eduardo Rohl, Dr. A. Romero, C. F. Wachter, R. R. McIlwaine, H. Pearson, R. E. McMillen, and T. A. Kibby.

Tanker Launched

A new 600-ton tanker, christened "Navigator No. 31," with a capacity of 4,000 barrels of crude, was launched recently at a ceremony in the port of Tampico, Mexico. Cost of the ship was 500,000 pesos. Technicians and workers employed were entirely Mexican.

Regulations of New Peruvian Law

Regulations for implementation of the new petroleum law enacted on March 12 have been presented by the government commission. They comprise 365 articles mainly concerning the formal procedure for obtaining concessions. An important provision is established in Art. 52, which grants that a concessionaire who renounces part of his concession during the exploration period retains the right of obtaining 50 percent of the whole area of the original concession for exploitation. He may also apply for new concessions of the same size as the abandoned ones. By this provision he is entitled to explore a much larger area than the original maximum of 400,000 hectares for retaining the definite 200,000 hectares for exploitation.

To avoid superposition during the first applications, the coastal area of principal interest, i. e. the Sechura district, will be divided into a number of blocks of 200-300,000 hectares each, open for concession.

The term for applications is definitely established at 120 days after issue of regulations, fixed at June 12 according to the law. National companies will be entitled to apply after 60 days for concessions of a minimum area of 10,000 hectares and not exceeding 10 percent of the above named lots, that is, 20-30,000 hectares.

Increased Activity In South America

Exploitation activity in Colombia is at the highest peak in history, according to George S. Flanders, export sales engineer of Lane-Wells Co., who is back from a two-months' tour of Mexico and South American countries. Off-shore operations in Trinidad to date have been successful and more activity of this type is planned.

Mene Grande's New Treasurer

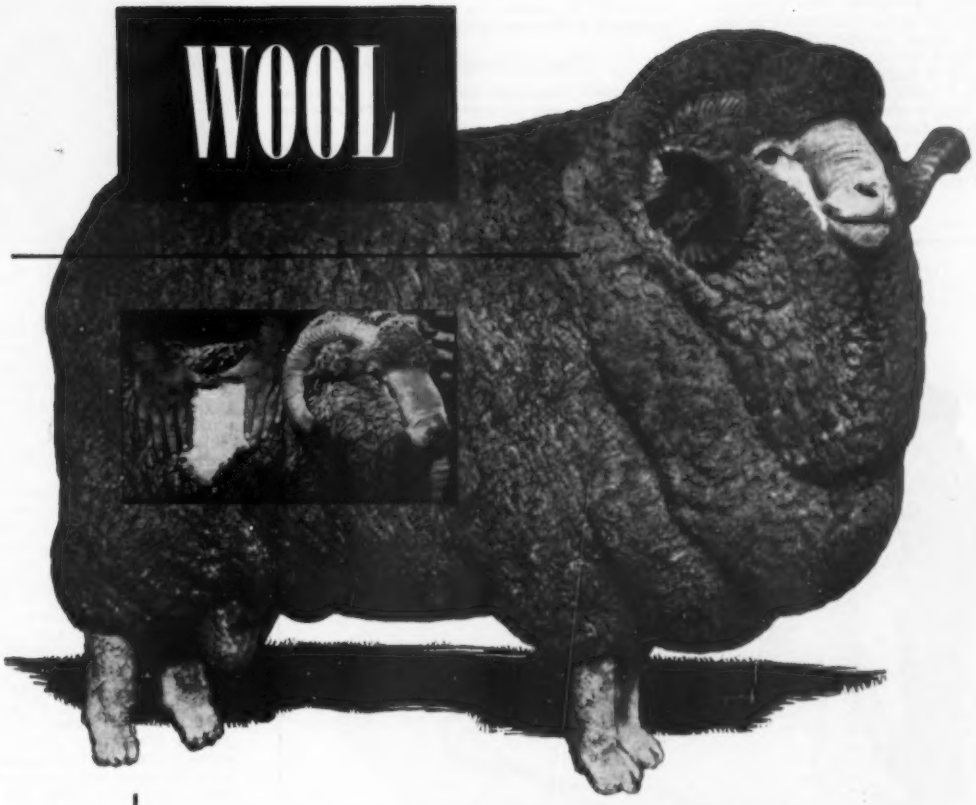
William W. Adams was appointed manager of accounting, treasurer and a director of Mene Grande Oil Co., effective May 1. He succeeds William G. Hubert, who retired after 29 years of service with Gulf subsidiaries in Venezuela, Mexico and Ecuador.

Mr. Adams, now 46, has been in Meneg's employ for 24 years, having arrived in Maracaibo in 1928. He was born in Louisiana and studied accounting in Texas.

Harold E. Mortlock has been named to succeed Mr. Adams as assistant manager of accounting and assistant treasurer.

W. W. Adams

WOOL



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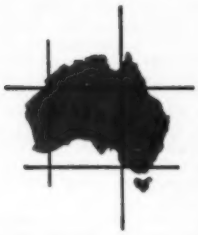

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of the world's supply...
more than half
of all the top-quality
Merino wool.

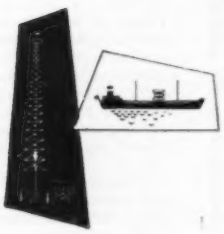
Wool is **one-third**
of Australia's
total export trade...
accounts for **one-tenth**
of the national income.

Another mighty important
commodity
to Australians is
OIL...

The petroleum products
which have aided
industrial expansion...
which give power,
light, warmth...
which fuel and lubricate
all manner of
modern transport.

More than a **billion**
imperial gallons
of oil products
each year
are the **life-blood**
in the arteries of
the Australian Commonwealth...
are helping to build
a stronger nation...
a better way of life
for the Australian people.

In Australia, as elsewhere
in the Eastern Hemisphere,
people know
they can depend on
the Stanvac organization
to supply this vital oil.



STANDARD-VACUUM OIL COMPANY

A name that stands for "Progress" in the East

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SOUTH PACIFIC ISLANDS • SOUTH WEST AFRICA • TANGANYIKA • THAILAND • UNION OF SOUTH AFRICA

Oil Quota Debated

Negotiations to supplement and amend the 1939 Trade Treaty between the U. S. and Venezuela began in Caracas in mid-April. The Venezuelan Foreign Office requested last June that negotiations be undertaken to "conform to new conditions." While regulations governing commerce between the two nations covering some 2,000 articles are on the agenda, the principal aim of Venezuela is to secure alterations in the present oil-import quota system, under which Venezuela oil is taxed 10.5 cents a barrel up to a certain point, and 21 cents beyond. As one of the best customers in the world for U. S. exports ($453.7 million bought in 1951), Venezuela's bargaining position is fairly strong.

Roy R. Rubottom, Jr., a Texan by birth, heads the five-member U. S. mission. He was at one time secretary of the U. S. embassy and consul at Bogota; for the past two years he has been in the State Department at Washington, lately as director of the Office of Central American Relations.

William F. Gray, State Department economist; Harold P. Macgowan, Commerce Department economist; Dr. Herbert E. Striner, Department of the Interior specialist on minerals tariffs; and Dr. James H. Kempton, agricultural attaché of the U. S. embassy in Caracas, are the other members of the team.

Pipe Arrives in Mexico

Petroleos Mexicanos has begun to receive the initial shipments of line pipe ordered from the United States for the government oil agency's intensified drive to extend its oil and gas pipeline systems. Thirty tons of line pipe are reported to have been delivered in Mexico thus far.

YOU CAN CUT COSTS...

WITH THIS NEW, SELF-CONTAINED

DRUM RINSER

This new, low cost unit provides a fast, practical method of cleaning drums at petroleum bulk plants and terminals—eliminating the need for returning drums to the refinery for every refill. To every industry using drums which can be cleaned by petroleum-based solvents, it offers a route to large-scale savings. *One oil company expects savings of $12,500 a year after installing a drum rinser and barrel filling equipment in a bulk plant handling 2500 barrels annually.*

Every inch of the interior surface of a drum is scoured in less than a minute...sand and similar substances are removed without draining. No piping of air lines is needed—just one electrical connection.

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R. M. Owens

ROY M. OWENS, oil refinery engineering and construction specialist, has been named managing director of a new petroleum refinery subsidiary which the Standard-Vacuum Oil Co. is forming in Australia to operate manufacturing facilities now undergoing expansion at an estimated cost of $30 million.

Mr. Owens has a background of more than 26 years in the petroleum industry of the United States, Europe and South America. He visited Australia earlier this year as a member of a technical team which surveyed requirements for enlarging the present Altona Refinery near Melbourne.

The Altona plant, which was placed in operation in 1949 by Vacuum Oil Co., Pty., Ltd., a Stanvac marketing subsidiary, is a small lubricating oil and asphalt refinery. Now processing more than 1,600 barrels of crude oil per day, it will be enlarged to a 22,000 barrel plant and will then produce a full range of petroleum fuel products as well as lubricating oils and asphalts.

Mr. Owens, a native of Texas, is a 1924 engineering graduate of Texas A. & M. College. He started in the oil industry in 1926 as a structual steel designer and subsequently worked for refinery contracting firms. He has handled important engineering and construction assignments in New York, Philadelphia, the island of Aruba and in Europe. During the war he helped build emergency refining facilities needed to provide high-octane gasoline and other petroleum products for the Allies. He has been with Socony-Vacuum Oil Co., Inc. since 1935 and was that company's chief project engineer when chosen to become the operating executive of the new Australian subsidiary.

Braun Co. To Build Altona Refinery

Standard-Vacuum Oil Company has awarded to C. F. Braun & Co., Alhambra, Calif., the engineering and construction contract for its new 20,000 b/d crude oil refinery to be built at Altona, near Melbourne, Australia, by its subsidiary, Standard-Vacuum Refining Company, Pty., Ltd. D. C. Lockwood, Braun's project manager for this installation, and R. V. Peaslee, manager of the contractor's New York office, together with a group of engineers and process designers, are presently working with Stanvac's refining co-ordination representatives in order to get the engineering work under way promptly.

The Braun Company has a background of more than 40 years in the construction of petroleum refining and chemical plants. It has recently completed two projects, one in Texas and one in New Jersey, similar in size to Stanvac's proposed Altona refinery. The new refinery will adjoin the present 1,600 b/d lubricating oil and asphalt plant which up to now has been operated by Stanvac's marketing subsidiary in Australia, Vacuum Oil Company, Pty., Ltd. The new installation will include modern catalytic cracking equipment, a crude topping unit, reforming facilities, light products treating equipment and a steam-generating plant.

C. L. Burrill

CECIL L. BURRILL will take charge of the New York offices of Creole Petroleum Corp. effective September 1. He is now in Venezuela reviewing the company's operations and, following a brief vacation in New England, will return to New York in late August to take up his new duties. Mr. Burrill will replace Lloyd G. Smithy, vice president and director, who will devote his remaining time until retirement to refining problems of the company.

Mr. Burrill joined Creole in August, 1949. Prior to that time, he was head of the budget department and petroleum economist of Standard Oil Co. (N. J.). He returned to Creole on June 6, 1952, after serving 18 months as director of the program division of the Petroleum Administration for Defense.

To Exceed Production Quota

Hungary's Lovasz-1 Petroleum National Enterprise expects to exceed its producing quota this year by 2,000 tons, according to Szabad Nep. So far it has produced 229,669 forints worth of crude products in excess of the plan. The Lovaszi field has always been the highest producer among the Trans-Danube fields, formerly operated by the MAORT-Hungarian-American Oil Company, subsidiary of The Standard Oil Co., which held a drilling concession in that area. Since nationalization, all these fields have been decentralized, and each field is a separate national enterprise.

Forms Canadian Subsidiary

Bishop Oil Co. is organizing a Canadian subsidiary under the laws of Alberta Province to be known as Canadian Bishop Oil, Ltd. Bishop's present leases in Canada total 5,118 acres. Four wells were brought in on a 160-acre Crown lease in the Redwater Oilfield of Alberta Province during 1950 and 1951. These are averaging total daily production of 360 barrels of 35° gravity oil.

New Marine Bunker Terminal

Standard Oil Company of Spain, S.A. opened a new $700,000 ship bunkering station at Las Palmas, Canary Islands on May 26. Las Palmas is one of the chief fueling stations for vessels in the European trade. The installation, with three 80,000-barrel tanks, includes complete equipment for direct high-speed delivery of fuels from shore to ship via a jetty that is equipped to handle the world's largest vessels.

Discovery in Montenegro

Oil deposits were found in March, 1952, in the Yugoslav Federative State of Montenegro near Petrovac on Sea, after a search continuing for more than a year. Producing depth is about 600 meters. The deputy president of the Council for Industry and Construction of the Yugoslav Federalist Peoples' Republic, Ljupo Arsow, stated that "it would be premature to assert that the find of oil will be exploited."

Imperial To Enlarge Regina Refinery

Imperial Oil Co. Ltd., has announced that contract for the major portion of a $7 million modernization program at its Regina refinery has been awarded to Fluor Corp of Los Angeles.

Plant construction is expected to begin late this year and completion is scheduled for the Spring of 1954.

Venezuelan Representative Named

Travis A. Brown has been appointed by the Hunt Export Co. as its representative in Venezuela. Mr. Brown was previously with a major oil company in Venezuela. His appointment is effective as of July 15, and his office will be located in the Vila Hote, Caracas. Mr. Brown will handle all tools and equipment distributed by Hunt.

Canadian Gulf Receives Permission To Build Pipeline

Canadian Gulf Pipeline Co. has received permission from the Minister of Highways of Alberta to construct a 115-mile crude oil pipeline from the Fenn-Big Valley-Stettler area to the Inter-Provincial Pipe Line Co.'s terminal at Edmonton.

The pipeline has been designed as a gathering system for oil from the Big Valley and Fenn fields into Stettler where there will be a main line pump station with a 12-inch line from Stettler to Edmonton. The initial capacity of the line is in excess of 35,000 barrels per day and the initial operating load is expected to be 10 to 11,000 barrels daily. The cost is estimated at $5 million. Construction will be commenced in the immediate future, with completion anticipated in the Fall.

OIL COMPANY STAFF CHANGES

R. S. MCFARLAND was elected executive vice president of Seaboard Oil Co. in charge of operations in the United States and Canada, with headquarters in Dallas. J. P. Gasser, vice president, will be executive assistant. R. A. Stehr was elected vice president and co-ordinator of exploration. Melbert Schwarz was elected vice president to succeed Mr. McFarland as manager of the mid-continent division. N. A. Rousselot was elected vice president and will continue to act as manager of the western division at Los Angeles. B. H. Faulkner will continue as vice president in charge of finance, with headquarters in New York City. A. W. Vitt, with headquarters at Casper, Wyo., was appointed manager of operations in the Rocky Mountain area. W. E. Powell, with headquarters at Calgary, Alberta, will continue to act as manager of operations in Canada. Other personnel changes included the appointment of H. C. McCarver as chief geophysicist, R. G. Williams as purchasing agent, and C. J. Maki as manager of gas operations.

J. W. HUDSON has been named superintendent of drilling and A. L. Rhodes superintendent of production of Deep Rock Oil Corp. Donald K. Auld, formerly chief engineer for the Eastern Kansas District, succeeds Mr. Rhodes. It was also announced that James M. Moore, former operations analyst, has been named office manager in the production division's Tulsa headquarters.

Mr. Hudson joined the company in July, 1951 as general superintendent of production following a number of years' experience with a Texas gas firm. Mr. Rhodes has been with Deep Rock since May, 1951 when he was named superintendent in Eastern Kansas after several years' work in similar capacities with other oil companies.

Mr. Auld came to Deep Rock in 1949 as petroleum engineer in Eastern Kansas to continue a varied engineering career. Mr. Moore became an employee through Deep Rock's purchase of another oil company in 1948. He has been in petroleum production work since 1935.

F. C. BOWMAN has been appointed director of marketing and assistant to the manager of The Atlantic Refining Co. of Africa, Ltd. He will be stationed at the Capetown headquarters of Atlantic's South African subsidiary.

Mr. Bowman has been manager of Atlantic's Philadelphia and suburban marketing district. He will be succeeded in Philadelphia by A. R. Sanborn, who has been manager of the Newark, N. J., marketing district of the company.

R. A. HUNTER has been appointed assistant to C. M. Gile, vice president in charge of domestic marketing, Gulf Oil Corp., Pittsburgh. He will handle the coordination of the sale of all bulk products, budgets and costs, and will supervise office procedures. Mr. Hunter joined Gulf as a clerk in 1933, and in 1944 was made assistant to the general manager of the fuel oil department. He served the PAW during World War II and again was drafted by PAD in 1950.

JOHN C. SAMPLE has been elected a director of General Petroleum Corp. For eleven years prior to 1949, Mr. Sample was with General Petroleum's marketing department, serving as vice president and director. He then went to New York as a director of the Standard-Vacuum Oil Co., returning to General Petroleum in June.

R. E. GARRETT, division general manager of the Philadelphia sales division, Gulf Oil Corp., retired August 1 after 41 years of service with the corporation. He was succeeded by C. W. Healy, previously of the Boston division. D. R. Ferris succeeded Mr. Healy at Boston.

STEWART S. KURTZ JR. has been appointed technical associate in Sun Oil Company's research and development department. He will move to department headquarters at Marcus Hook as a staff assistant to Dr. J. Bennett Hill. In addition to handling technical matters in his specialized fields, he will represent Sun in various scientific and technical organizations outside the company.

A. A. TURNER, formerly co-ordinator of Imperial Oil Company's management-development department in Toronto, is now manager of Imperial's British Columbia marketing division, succeeding W. C. Garbutt, who becomes chairman of the British Columbia field co-ordinating committee.

H. W. Haight

HAROLD W. HAIGHT, executive vice president and director of the Creole Petroleum Corp., was awarded a distinguished achievement medal by the Colorado School of Mines at recent commencement exercises. He was graduated from the school in 1927, when he joined the Cia. Transcontinental de Petroleo, S.A., a Mexican affiliate. He was transferred in 1937 to the Standard Oil Co. of Egypt, S.A., Cairo, as manager. Two years later he was made managing director of that company. Mr. Haight joined Creole in Venezuela in July 1945 as production manager and a year later was elected a vice president and director. He was elected executive vice president of the company in March 1950.

ROBERT H. DOTT of Norman, Okla. has become executive director of the American Association of Petroleum Geologists. The rapidly growing membership of the AAPG, now about 9,000, has made necessary a larger headquarters staff. Mr. Dott will direct all of the various activities of the Association headquarters, but the preparation of new books and special volumes on problems and methods of petroleum geology will receive his particular attention.

John W. Clark, assistant chief geologist of the Magnolia Petroleum Co., Dallas, Texas, has been appointed as secretary-treasurer of the association to succeed Mr. Dott. J. P. D. Hull and E. W. Ellsworth will continue as business manager and assistant business manager respectively.

G. P. CROMBIE has been promoted to chief geologist and R. P. Galbraith has been appointed chief land man of the Texaco Exploration Co., T. W. G. Thomson, manager, has announced. Mr. Crombie was born in Edmonton, and was formerly with the Department of Mines and Resources (Geological Survey), Ottawa. Mr. Galbraith was born in Guelph, Ontario, and left a Calgary law firm to join Texaco in 1949.

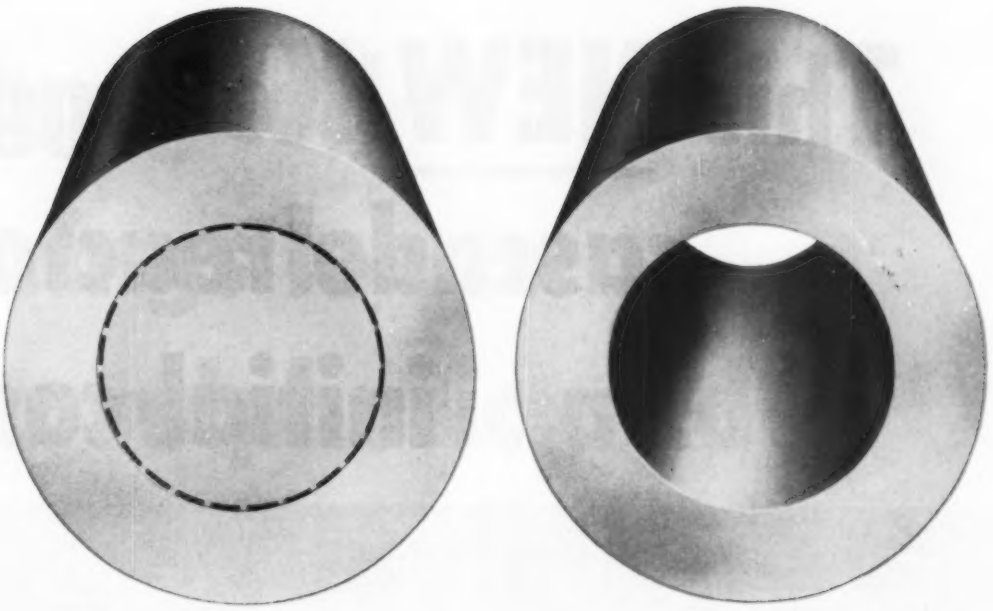
H. W. ROSS has resigned as assistant secretary and manager of Sohio Petroleum Co. to enter consulting work in western Canada. His offices will be in Calgary. Mr. Ross joined Sohio in 1948 after several years with Dow Chemical Co.

DR. JOHN J. THORPE has been appointed assistant medical director of Esso Standard Oil Co. The post has been vacant for some time. Dr. Thorpe has been a member of the medical staff of Standard Oil Co. (N. J.) since 1949.

JAMES W. BURKHART has been appointed production manager of Texas Eastern Production Corp., Houston. Haden J. Upchurch has been made manager of the land department and Robert E. Daniel secretary-treasurer.

Mr. Burkhart formerly was general superintendent for Brown and Wheeler, oil producers, and previously was connected with Baker Oil Tool Co. and Humble Oil & Refining Co. Mr. Upchurch came to Texas Eastern from Cabot Carbon Co. where he was district landman at Midland, Texas. Mr. Daniel was formerly assistant comptroller of Schlumberger Well Surveying Corp.

J. W. Burkhart *H. J. Upchurch* *R. E. Daniel*



HOW TO SAVE THIS HOLE STEP when you make hollow parts

THE center hole is already there when you use Timken® seamless tubing instead of bar stock for hollow cylindrical parts. Drilling is eliminated; finish boring is often your first production step. Because there's less steel to machine away, you get more parts per ton of steel. And to assure you further savings in material, the Timken Company offers a tube engineering service which recommends the most economical tube size for your job—*guaranteed to clean up.*

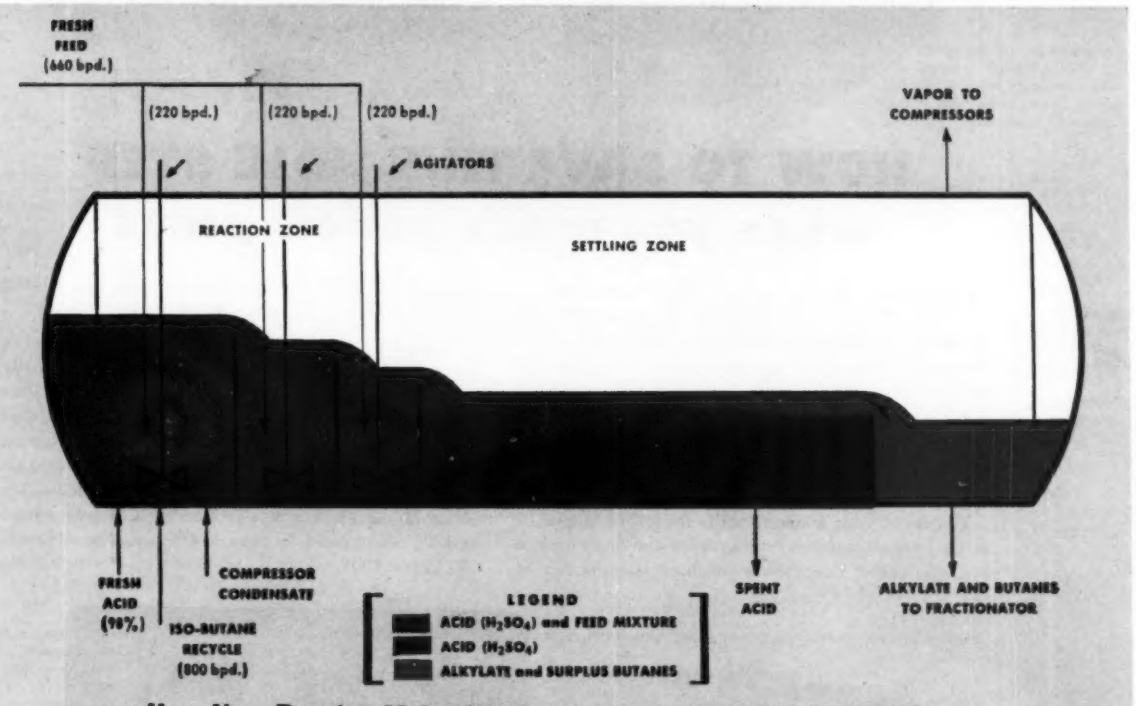
You make your machine tools more productive by using Timken seamless tubing. Since you don't have to drill the center hole, screw machine stations can be released for other operations. You get added machining capacity without adding machines.

You get a better quality product, too. The piercing operation by which Timken tubing is made is basically a forging operation. This gives the tubing a uniform spiral grain flow and a refined grain structure that brings out the best in the quality of the metal. And this quality is uniform from tube to tube and heat to heat, due to the Timken Company's rigid quality control. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

This NEW Kellogg-cascade reactor initial cost



How New Reactor Maintains 9-to-1 Isobutane-Butylene Ratio

Assume, as a simplified case, that fresh feed is charged to the reactor shown here at 660 barrels per day. This feed, comprising a mixture of approximately 300 barrels of butylene and 360 barrels of isobutane, is divided into three equal 220 BPD portions, each of which is introduced into one of the three reaction sections.

To increase the amount of isobutane at the points of reaction, a recycle stream of isobutane from the unit's main fractionator is fed in at the bottom of the first section. This recycle must be at a rate of 800 BPD to provide the desired isobutane-butylene ratio.

Adding up the total amount of isobutane in the first reaction section, we find there are 920 barrels to 100 barrels of olefin. Since only about 110 barrels of the isobutane reacts with the total olefin present, about 810 barrels of excess isobutane are carried over into the second section where the cycle starts over again.

Thus, while the total amount of olefin charged each day to this reactor is 300 barrels and the total amount of isobutane is 1160 barrels (a ratio of about four-to-one), the actual ratio at all reaction points is better than *nine-to-one*.

designed brings lower to sulphuric acid Alkylation...

SULPHURIC ACID alkylation has long been recognized as a vital process in the production of high octane avgas and a valuable tool for upgrading a refinery's motor gasoline pool.

Now several Kellogg design innovations have been incorporated in this process which reduce the initial investment required, as well as the daily operating costs, for the production of a given quality and quantity of alkylate.

The most important improvements have been made in the reactor itself. With the new Kellogg cascade reactor, a highly desirable nine-to-one ratio of isobutane to butylene is maintained *in the reaction zones*—although the overall isobutane *feed* to the reactor is less than four-to-one. While increasing the yield and improving the quality of alkylate, this new design also materially reduces the number of pumps and permits use of smaller vessels than would otherwise be required to attain a high isobutane-butylene ratio.

In addition, the cascade flow of acid and fresh feed in successive stages radically improves the economics of acid consumption. When feeding 98% sulphuric acid to the new Kellogg units, the acid concentration can be maintained at an efficient average of 91.5% in all reaction zones, while the withdrawal concentration is kept at a low 88%.

Add to these advantages the low horsepower requirements of propeller-type agitation and the savings inherent in auto refrigeration cooling . . . and it is evident why many refiners are exploring the possibilities of modern sulphuric acid alkylation.

New Kellogg-Designed Units

UNITS OPERATING
- In the Midwest—2500 BPD unit
- In the Southwest—1000 BPD unit
- On the Atlantic Seaboard—2200 BPD unit

UNITS UNDER CONSTRUCTION
- In Texas—1200 BPD unit
- In South America—1600 BPD unit

UNITS IN ENGINEERING
- On the Atlantic Seaboard—3500 BPD unit
- In Texas—1200 BPD unit

For further information, yield and inspection data, etc. write

THE M. W. KELLOGG COMPANY
(SUBSIDIARY OF PULLMAN INCORPORATED)

for fifty one years an integral part of petroleum refining progress!

KELLOGG

NEW YORK JERSEY CITY LOS ANGELES TULSA HOUSTON TORONTO LONDON PARIS

C. THEODORE JONES, senior marketer in charge of marketing in Europe, Africa and the Near East for the Tide Water Associated Oil Co., retired on June 30 after more than 27 years of service. He joined Tide Water in February, 1925 as supervisor of marketing for Europe, Africa and the Near East, and travelled through Europe, India, and Africa opening up new territories for the firm's Veedol and Tydol oil products in 1933 and 1934. In 1940 he was assigned to Japan as vice president and director of the Mitsubishi Oil Co. in which Tide Water Associated has an interest. He was also a director of the Japan Oil Storage Co.

The war saw Mr. Jones return, in 1942, to the United States as special representative with the export department of the Tide Water Associated Oil Company's western division at San Francisco. In 1945 he returned to New York to resume his marketing activities in Europe, Africa and the Near East.

John Faxon, formerly senior marketing assistant in the Industrial Sales section of Tide Water Associated Oil Co. at New York, will succeed Mr. Jones as senior marketing assistant in charge of marketing in Europe, Africa, and the Near East. Mr. Faxon has wide experience with lubricants. He joined Tide Water Associated in 1934.

C. Jones *J. Faxon*

D. C. Dunaway

D. C. DUNAWAY, who joined the Standard Oil Co. (N. J.) organization 18 years ago as an attorney, became a director and executive vice president of the Standard Oil Co. of Brazil July 1. Mr. Dunaway has served with affiliates in Argentina, Spain, Portugal, and in the Caribbean area where he was president of the Esso Standard Oil Co. (Cuba).

H. SAFFORD NYE has been elected treasurer of Richfield Oil Corp. to succeed Richard Gross who retired July 1. Mr. Nye formerly was vice president of Security-First National Bank of Los Angeles.

R. D. PINKERTON, former director of light oils at Sinclair Research Laboratories, Inc., has been named research associate. He started his career with Sinclair in 1930.

H. H. BEACH has been appointed assistant manager of the Texaco Exploration Co. Born at Gleichen, Alberta, Mr. Beach was with the Geological Survey, Department of Mines and Resources, Ottawa, before he joined Texaco in 1943 as senior geologist. He was promoted to chief geologist in 1948.

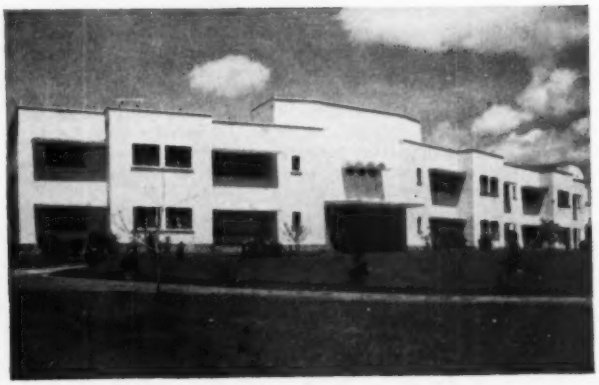
BYRON R. JOHNSTONE has been elected secretary of the American Petrochemical Corp. jointly owned by Cities Service and Firestone Tire and Rubber Co. John D. Snakenberg has been appointed manager of the petrochemical plant to be built at a site on the Gulf Coast yet to be selected. Engineering plans have been under way for several months and are near completion. The plant's production will ultimately encompass the broad fields of plastics, synthetic rubber, antifreeze and many high volume petrochemicals.

Mr. Johnstone has been with Cities Service since 1928, during the last five years as secretary of Cities Service Research and Development Co. Mr. Snakenberg has been a member of the Cities Service organization since 1923 and was manager of the Cities Service East Chicago Refinery from 1947 to 1950. Since 1950 he has been with Cities Service Petroleum, Inc., New York, as assistant chief engineer of the manufacturing division.

B. R. Johnstone *J. D. Snakenberg*

DUNLOPILLO COMFORT

for the Shell Company of Singapore



The modern block of flats pictured here has been built for the Shell Company for their personnel in Singapore. Like other installations of this Company in North Borneo and Indonesia, it is thoughtfully provided with the superb comfort of Dunlopillo mattresses and cushioning.

Dunlopillo provides the ideal support for every part of the body by the unique structure of its millions of tiny interconnecting cells. It is supremely comfortable and cool; moth, dust and vermin resistant; it needs no airing, turning or making and saves work. It is the ideal material for mattresses, cushions, upholstery, bolsters and pillows in any climate.

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Modern miracle in the desert

Controlling the flow of oil through 1068 miles of pipe line with minimum manpower is the job Westinghouse engineers were asked to tackle on the gigantic trans-Arabian oil project. Their answer is an ingenious Westinghouse electrical control system which keeps 330,000 barrels of petroleum a day flowing smoothly from oil fields near the Persian Gulf to storage tanks on the Mediterranean.

Five Westinghouse control stations along the line regulate the oil flow. One man at a master control board in each station directs the station operations through remote control . . . adding or siphoning off oil to increase or relieve pressure on the line. Protective devices automatically sound alarms or shut down units if something goes wrong. This modern electrical system replaces expensive and less efficient manual control methods which required large crews of men.

In addition, steam turbines for pumping . . . pipe-welding equipment . . . cathodic protection of pipelines . . . motor control centers for pipeline pumping service—provided by Westinghouse—helped to make possible this modern miracle in the desert. Such vital projects demonstrate the ability of Westinghouse to serve world industry.

Westinghouse leadership and experience in designing electrically controlled oil pipelines is on tap for similar projects anywhere—no matter how large or complex.

YOU CAN BE *SURE* . . . IF IT'S

Westinghouse

WESTINGHOUSE ELECTRIC INTERNATIONAL COMPANY

40 Wall Street, New York 5, U. S. A.

Santos-Sao Paulo Pipe Line

(Continued from page 46)

The terrain through which the pipe line runs between Santos and Sao Paulo is particularly difficult, including swamps, several lakes, a range of mountains, and urban areas. In addition, land prices are high; in some instances ten to twelve times that of similar rights in the United States.

A particular problem for the Santos-Sao Paulo pipe line was the mountain ascent the pipe line had to make from sea level at Santos to the high plateau on which Sao Paulo is located. The line had to mount 725 meters in four kilometers (or 2,378.6 feet in a little less than 2½ miles), creating a pressure of 1,020 pounds per square inch at the bottom of the range for fuel oils, and 890 pounds per square inch for lighter petroleum products.

Under normal circumstances a pumping station would have been constructed half way up the mountainside to reduce pressures and to do away with relay stations, but the severe slope of the mountainside, which has frequent avalanches caused by heavy seasonal rains, prohibited this construction.

Because of this situation, plus the pressure necessary for compensation for friction, particularly of the heavier oils moving through the pipe, it was determined that pressure at the seaport end of the pipe line would have to be from a minimum of 900 psi to 1,600 psi for light oils, and 1,020 to 1,500 psi for heavy oils to propel them to the relay station at 16 kilometers, depending on temperature and oil viscosity.

The second condition which forced the adoption of a high pressure system was the high viscosity of dark oil which produces a severe loss of pressure by friction.

Heat losses in the system were evaluated with extreme accuracy according to formulas that have been worked out, but other circumstances, such as the nature of the ground, its humidity and its temperature, could only be estimated.

Four Worthington pumps were installed at the initial pumping station at Cubatao. Two Worthington triplex horizontal 4½" by 18", 81 rpm, 20,000 bpd pumps, with 500 hp electric motors, will handle light oil products. For fuel oils, two Worthington triplex 4½" by 18", 61 rpm, 15,000 bpd pumps, with 450 hp electric motors, will be used.

At the top of the mountain range is the Alto da Serra pumping station. Here the fuel oil pressure is boosted by two Worthington pumps used to move the oil on into Sao Paulo. They are 450 hp and of the same specifications as those at Cubatao. These six pumps will do the major job of keeping the oil flowing from the docks where it is unloaded to the consumers in Sao Paulo and beyond.

Once having assumed the necessity for the high pressure system, Mr. Heltzel chose 10-inch pipe for light oils, pointing out that it had 1.82 times the capacity of 8-inch pipe, even though friction losses were 2.94 greater with the 10-inch.

The 10-inch line can deliver 59,000 barrels of gasoline in 24 hours, an amount considered large enough to satisfy future demands on the pipe line.

The Heltzel report recommended:

(1) Two main oil lines between Santos and Sao Paulo (Utinga) (28.7 miles), one 10-inch for light oils, and one 18-inch for fuel oils.
(2) Two high pressure pumping stations, one in Alemoa (a district of Santos) for all products, and another at 16 kilometers along the route of the pipe line for fuel oils only.
(3) Two distribution lines between the terminal and the tank yard in Utinga and Mocoa (industrial suburbs of Sao Paulo), one of these fitted with 6-inch pipe for light oil products and a 10-inch pipe for the fuel oil.
(4) One terminal in the Sao Paulo vicinity.
(5) A small terminal for unloading railroad tank-cars and truck-tanks connected with the distributing lines.

An additional line is envisioned to Compinas, but not until consumption reaches 6,000 barrels per day.

The line has been laid one meter below ground except up the slopes of the mountain. In this section, the pipe will rest on concrete blocks above ground.

Standard Oil Co. do Brasil, Shell-Mex Brasil Ltd., The Texas Co. South America Ltd., Companhia Brasileira do Petroleo Gulf, S.A., and Atlantic will use the pipe line jointly.

Williams Brothers Co. has acted as designing engineers and purchasing agents for the E.F.S. and J.'s Comissao de Oleoduto, a special committee of railway officials who are charged with construction and operation of the line. Mr. Heltzel is continuing to act as adviser on the project.

Rotary Hose for Portable Rigs

Chiksan All-Steel rotary hose unit in operation with Kelly in drilling position.

An all-steel rotary hose unit, designed specifically for portable rotary oil drilling rigs, has been developed and field-tested by Chiksan Co.

The unit consists of a six-foot outrigger swivel arm bracketed securely to the mast leg and extending from the standpipe away from the derrick. This is designated as a "Space-Saver." To this is attached a steel rotary hose incorporating ball-bearing swivel joints to permit complete flexibility and ease of operation in limited space. This in turn is connected to a drilling swivel extension which serves to increase the flexibility of the hose.

This new equipment was developed to overcome the problems encountered in drilling with portable rigs where working radius is small.

Although recommended for use as a complete unit, the "Space-Saver" and drilling swivel extension can be used separately with ordinary rubber rotary hose. The advantages in its application lie in eliminating rubbing of the hose against the mast leg and in increasing the radius of bend, thus reducing wear and tear on the rubber hose due to abrasion and kinking. The "Space-Saver" can be transported without disassembling or removal from the mast.

Washington Dateline

(Continued from page 45)

progress" despite huge oil earnings. In the future, says the report, "All resource countries with vision and determination can progress by adopting policies and programs aimed at making the best use of the opportunities for capital expansion which resource development makes possible."

The report, regarded as the single most important policy statement for the nation on petroleum and other resources, bears out the findings of two other documents. One was the policy statement of the National Petroleum Council which advises government. The other was the McCollum report of the council on long term availability of crude oil. Like the earlier documents, the commission report believes the petroleum industry can meet supply problems in decades ahead if left alone by government.

The spade work on the petroleum section was handled by Cornelius J. Dwyer, chief of the petroleum section of the Mutual Security Agency, and a staff including Mary E. McDermott of the Atlantic Refining Co. and William J. McMaster of the State Department. The final draft was partly the work of Sidney S. Alexander of the International Bank. A dozen oil men were brought in as consultants, including Eugene Ayres of Gulf; E. L. DeGolyer, Dallas geologist; Serge B. Jurenev, Continental Oil Co.; A. I. Leversen of the Independent Petroleum Association of America; Walter E. Caine of the Petroleum Administration for Defense; Edward Falck, gas consultant; and Hanina Zinder, gas consultant.

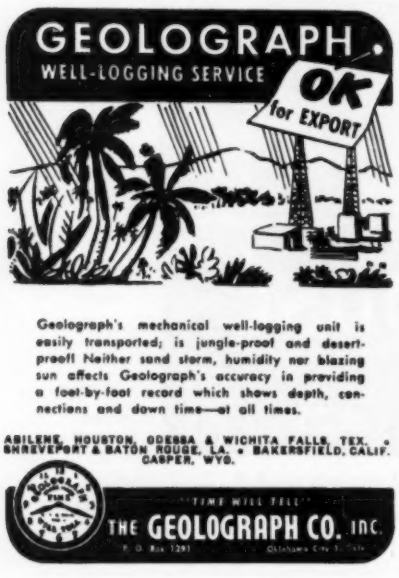
Heads Canadian Operations

James K. Ziegler has been elected vice president in charge of operations of Century Geophysical Corp. of Canada, subsidiary of the Tulsa, Okla., company with the same name. Offices of the new corporation are at 223 Examiner building, Calgary.

Mr. Ziegler formerly was supervisor of operations before his election as vice president. He has been with Century since 1948 and was engaged in geophysical work for several years prior to that. Other officers of the new Canadian subsidiary are Opie Dimmick, president; Ben Rummerfield, executive vice president; John Carlson, secretary; and J. B. Bender, treasurer.

Alpha Joins U.S. Smelting

Andrew G. Alpha, formerly regional geologist with General Petroleum Corp., has resigned to become division geologist, northern division oil department, for United States Smelting, Refining, and Mining Co. of Salt Lake City, Utah. Operations for the summer will be in the Williston Basin.



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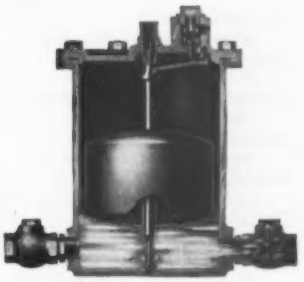

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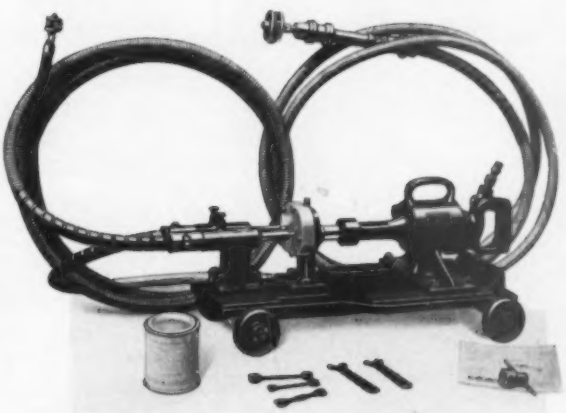

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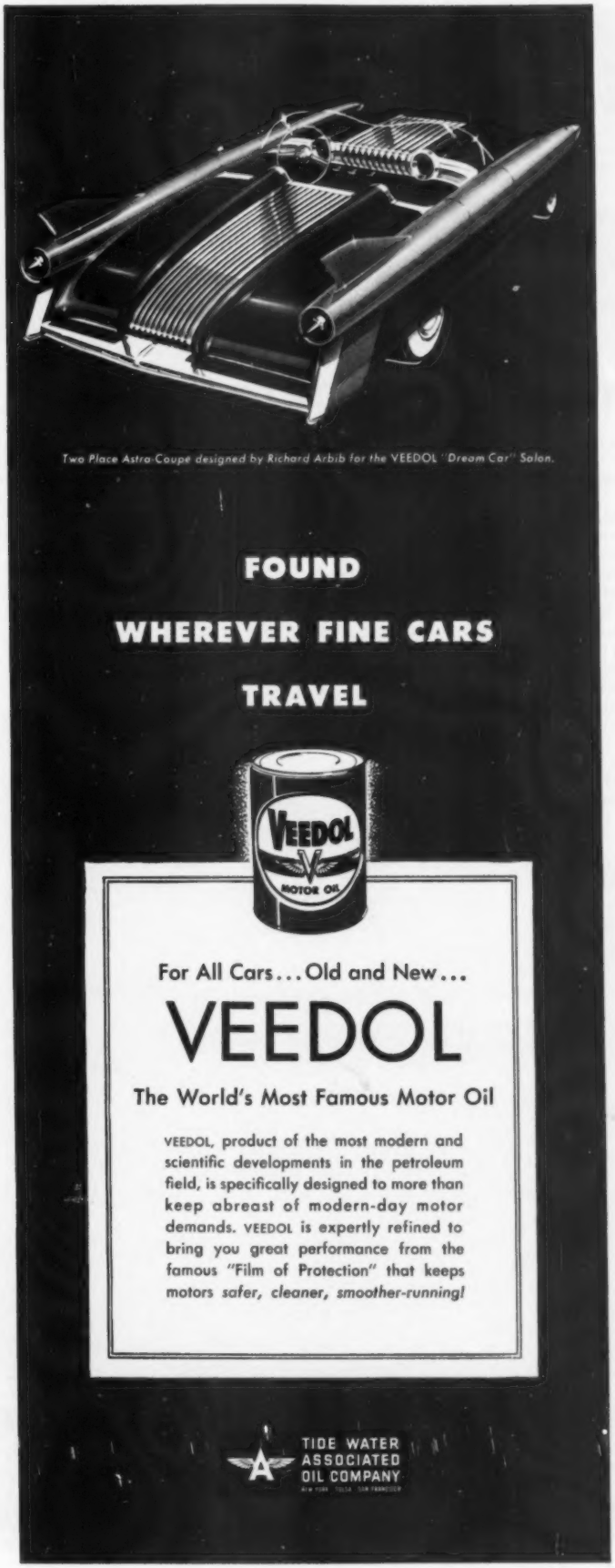
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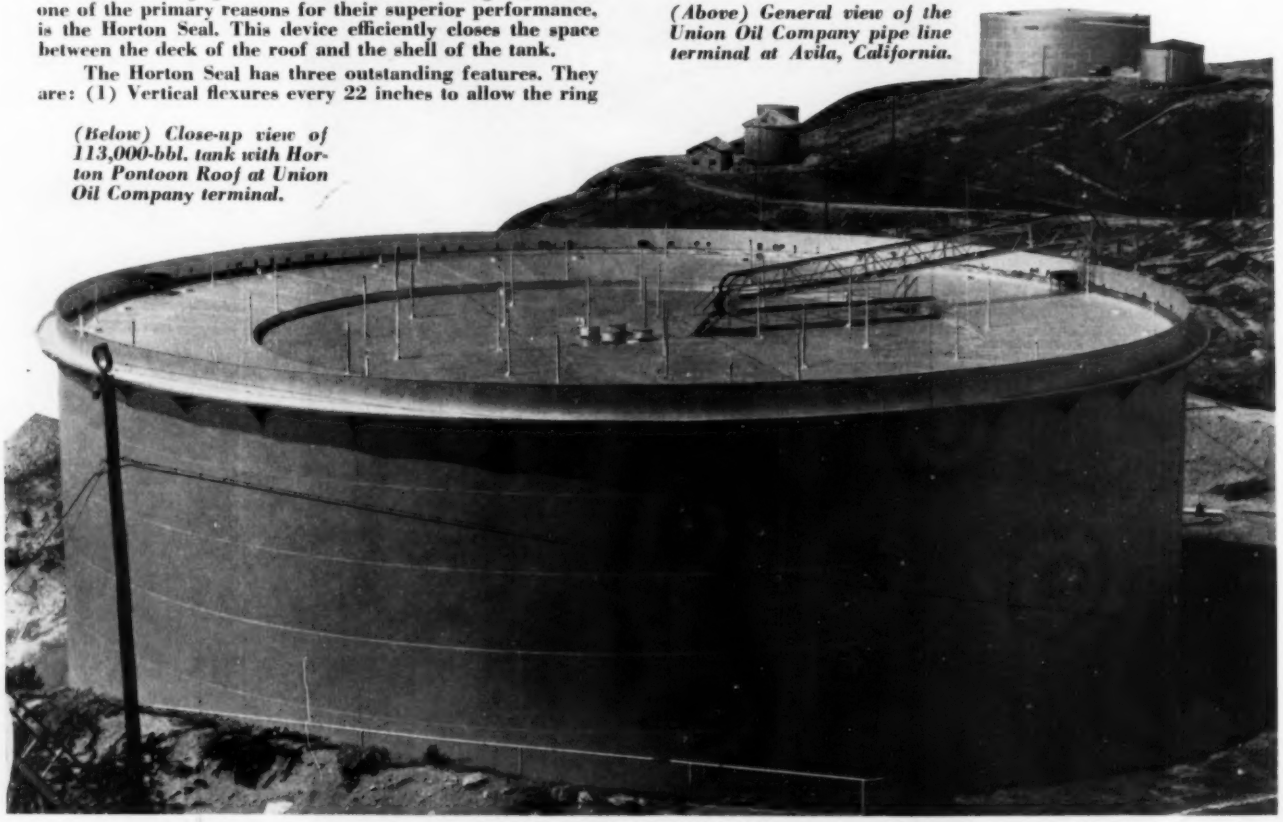
(Below) Close-up view of 113,000-bbl. tank with Horton Pontoon Roof at Union Oil Company terminal.



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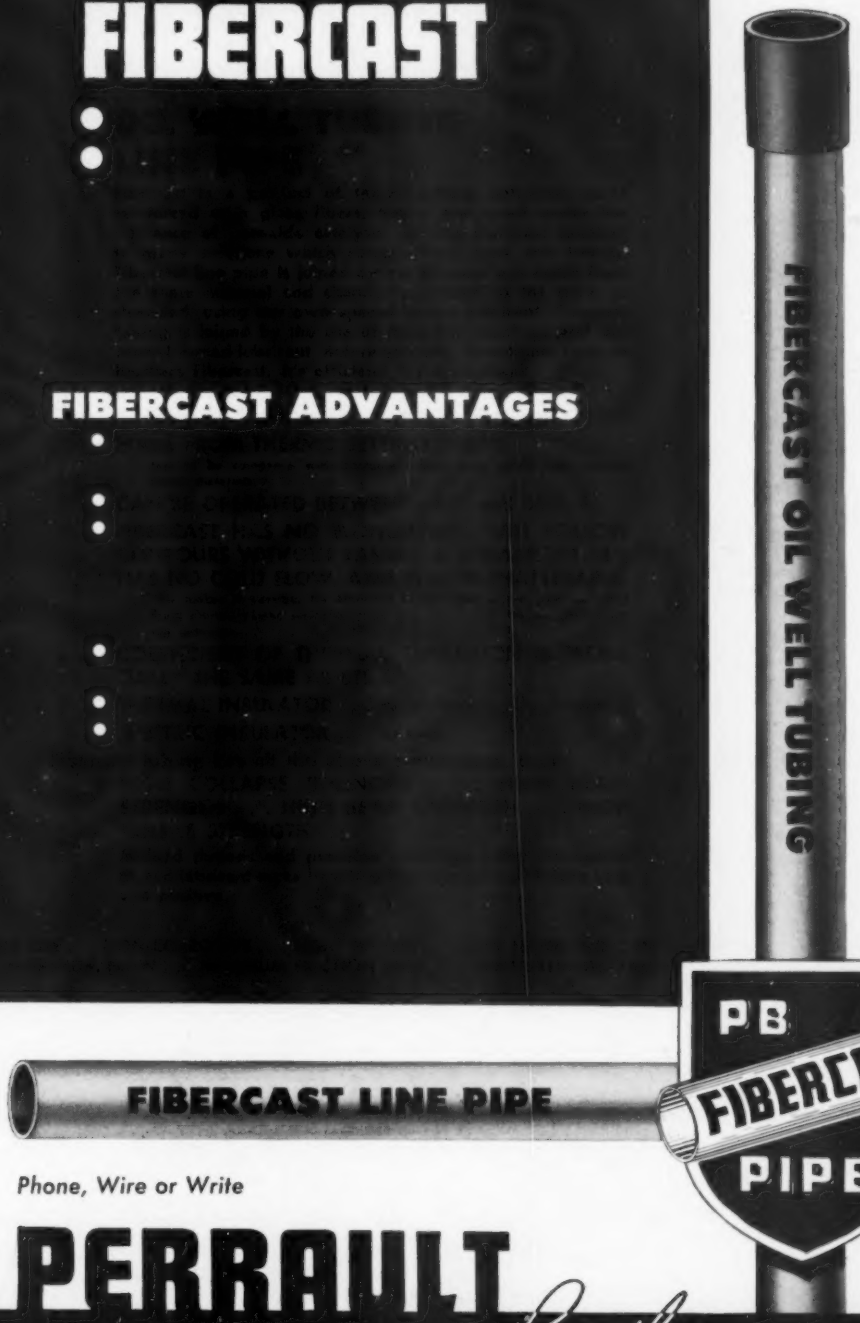

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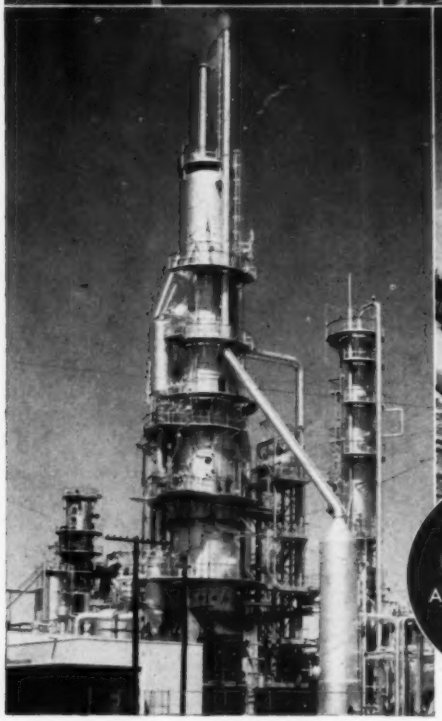

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